Gas Journal

Vol. 268. 103rd Year. LONDON, NOVEMBER 14, 1951. No. 4615. Price 1/3

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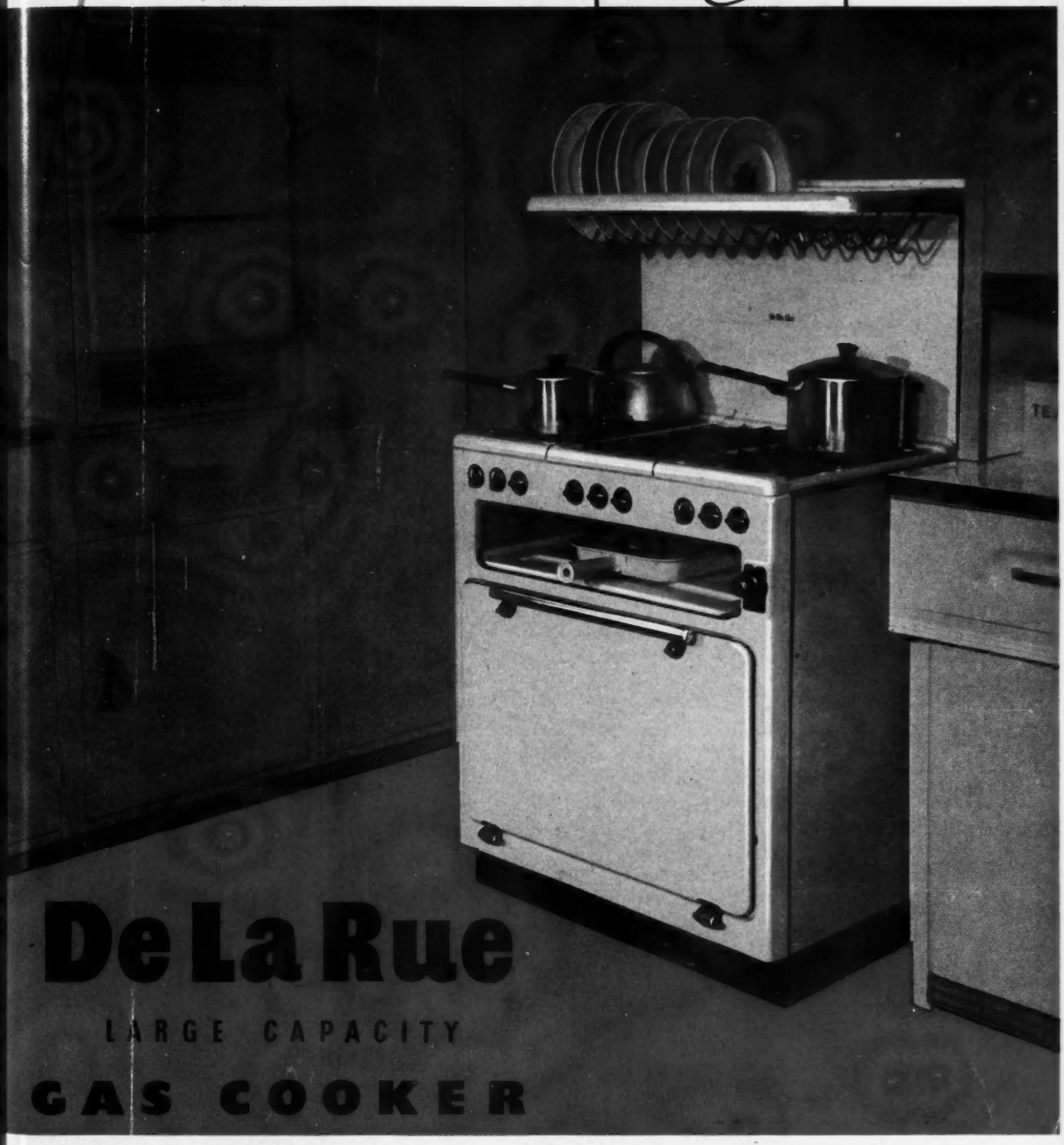

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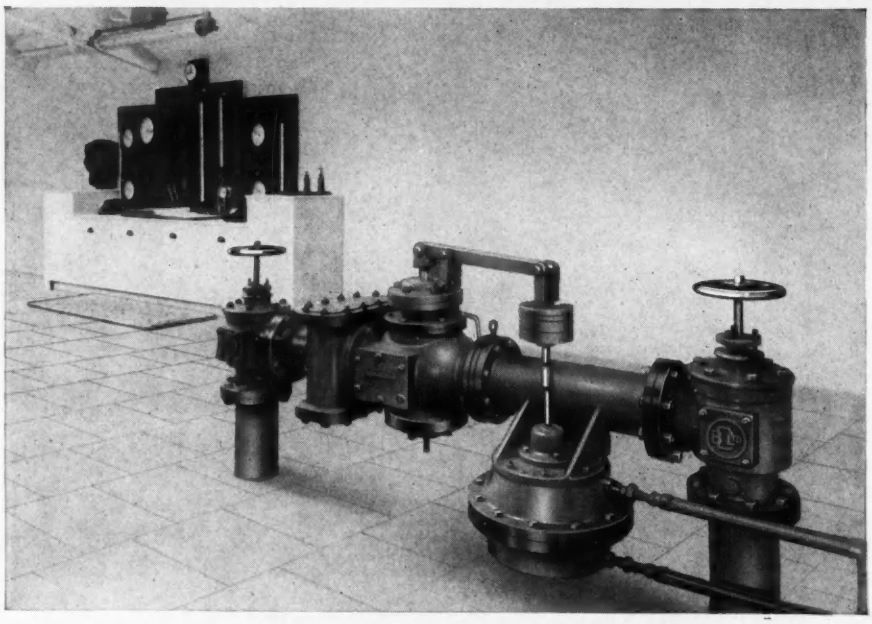

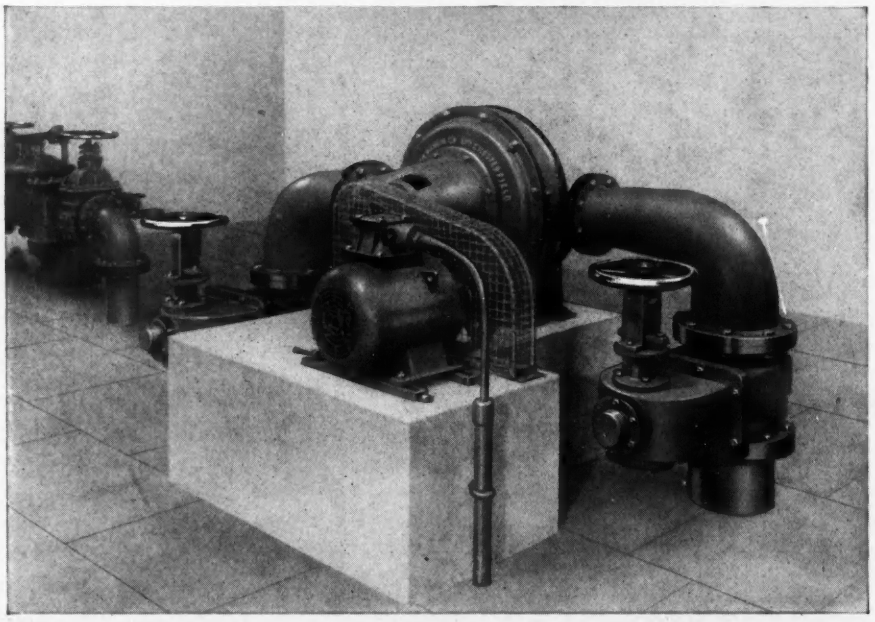

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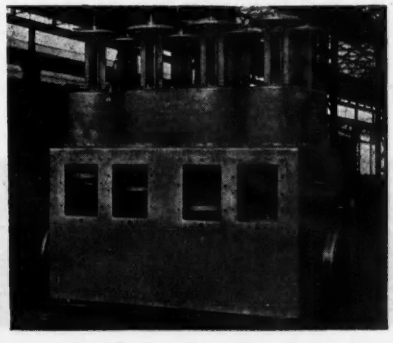

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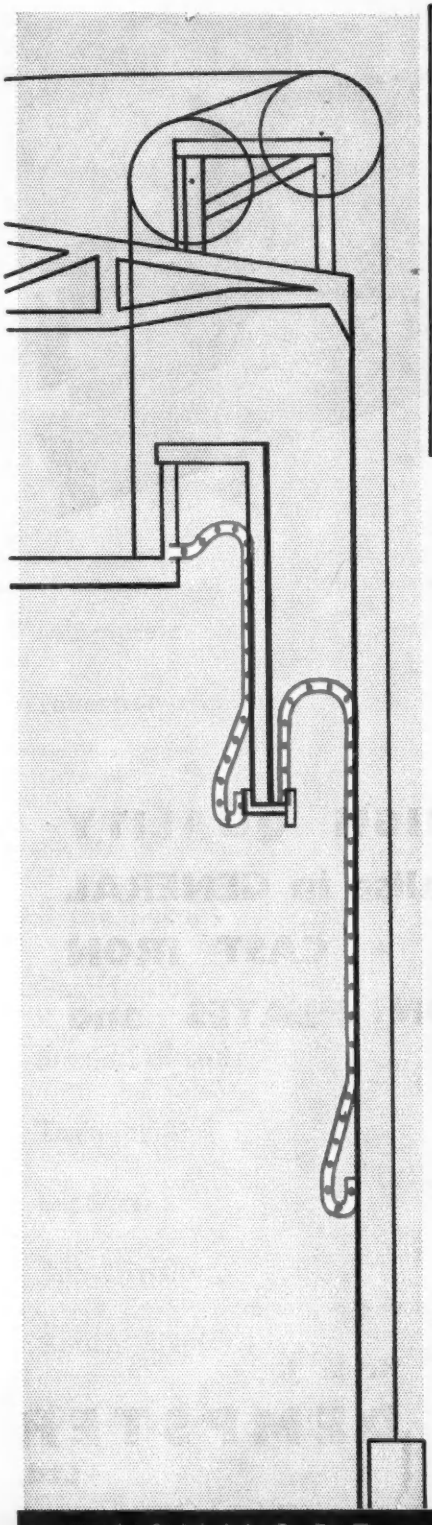

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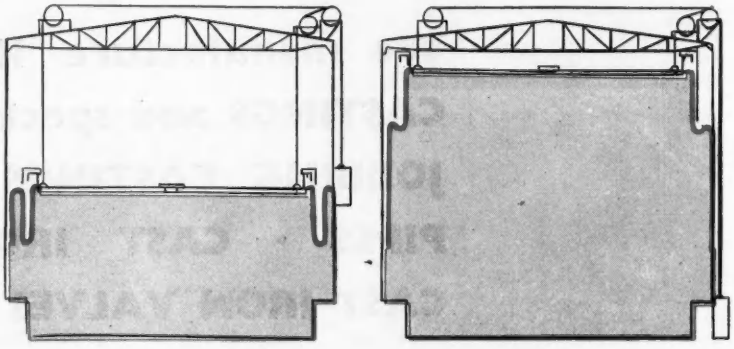

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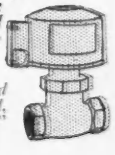

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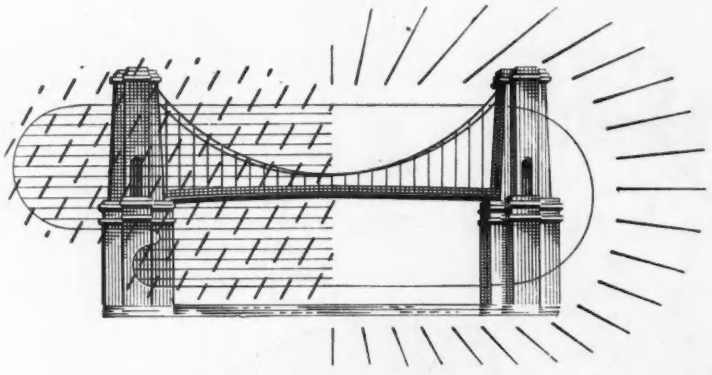

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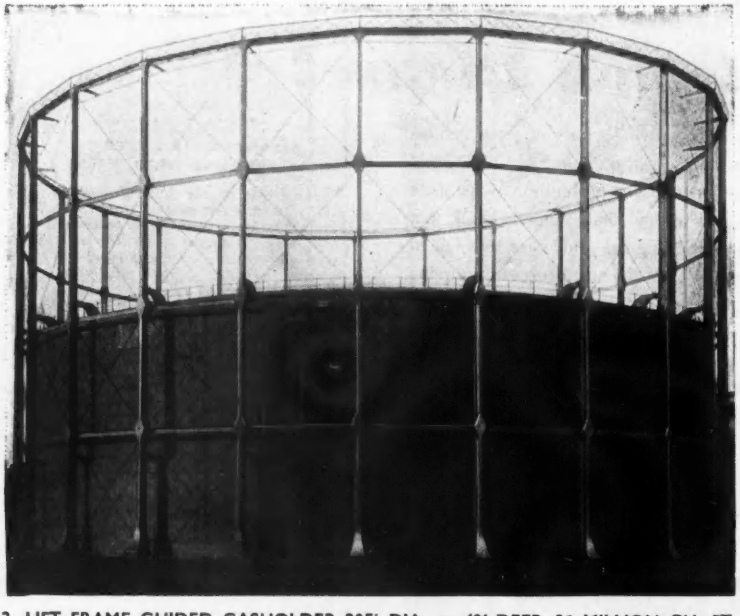

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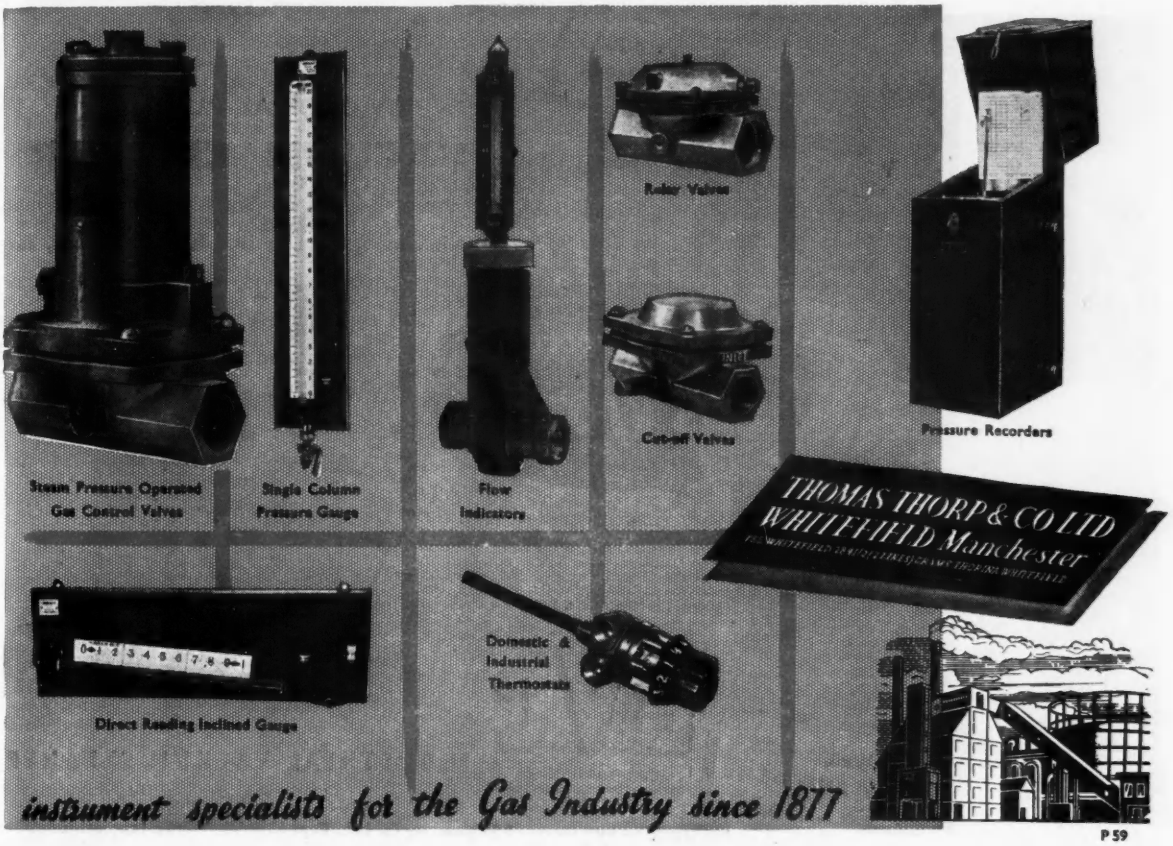

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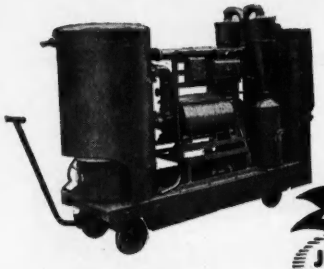

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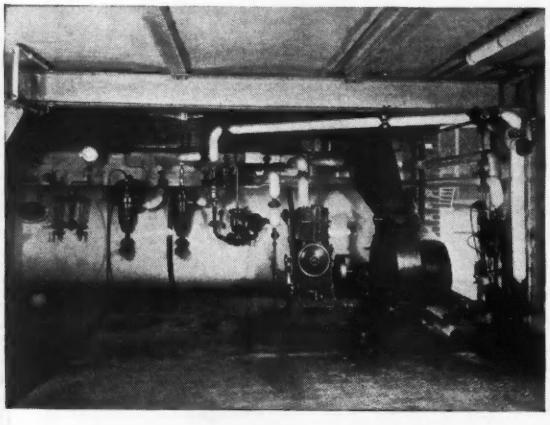

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150 mm. dia. C.I. watermain laid in Backavägen in 1942. Graph shows number of leaks due to external corrosion.

"*With reference to your letter dated 5th May, 1951, regarding Cathodic Protection, we hereby declare that since 26th October, 1949, when magnesium anodes were installed on the watermains in Backavägen, there have not been any more cracks on the main. A graph showing the previous history of cracks owing to outside corrosion of this main is enclosed.*" (Signed) H. Swahn, Chief Distribution Engineer, Gothenburg Waterworks, GOTHENBURG, 16th June, 1951.

And here is an extract from our engineer's report. "*Oct. 24th, 1949 . . . Arrived Gothenburg. Oct. 25th . . . Survey made. Oct. 26th . . . "Elektron" magnesium anodes installed and protection complete.*" It was as simple as that. With the right cathodic protection technique you can end the corrosion of years—in a matter of days.

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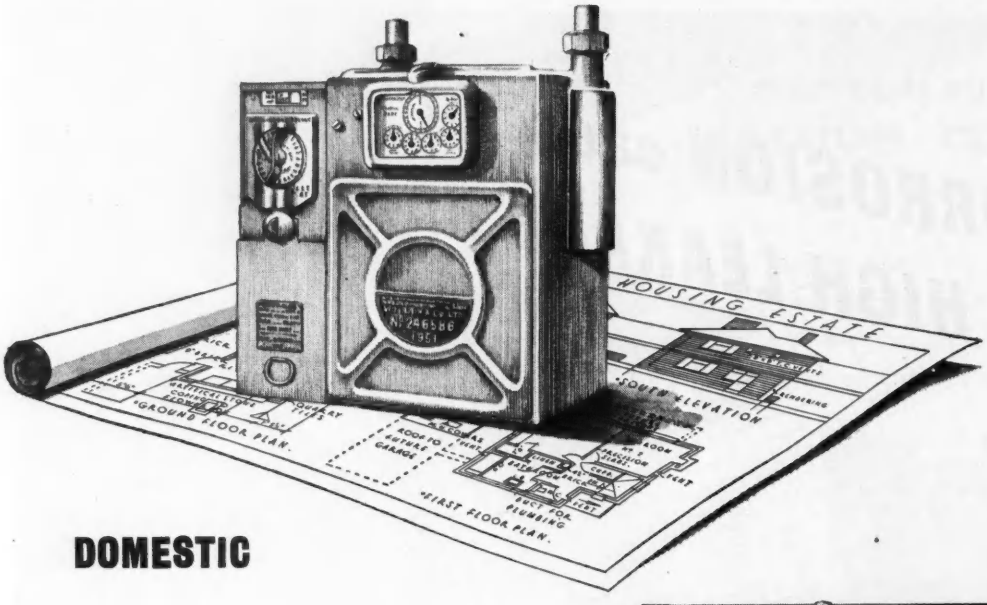

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of every capacity

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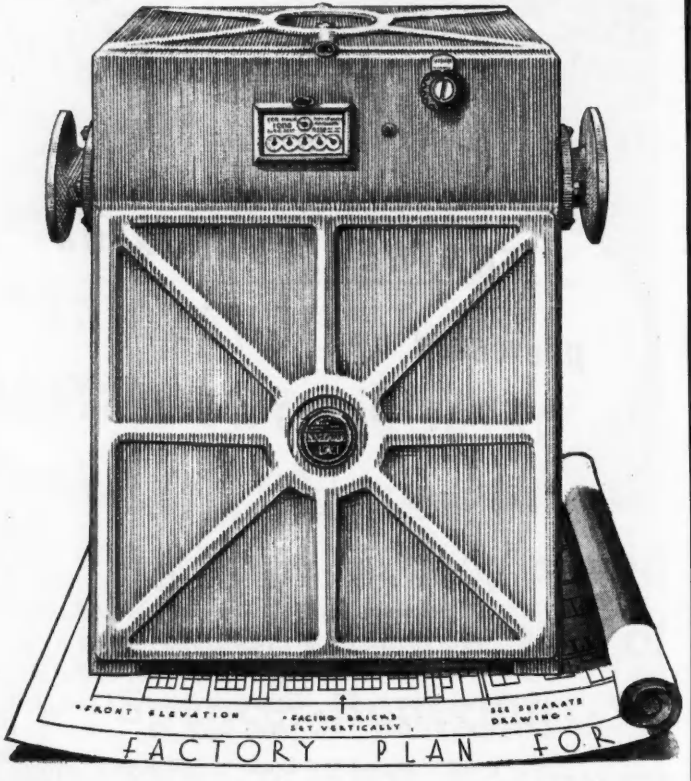
and long life.



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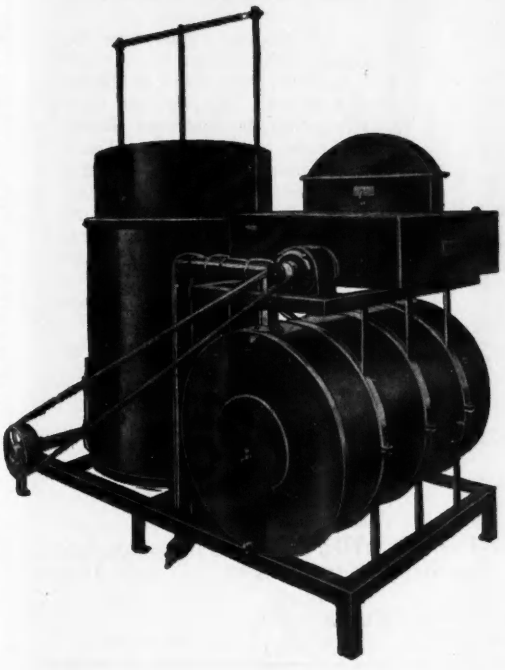

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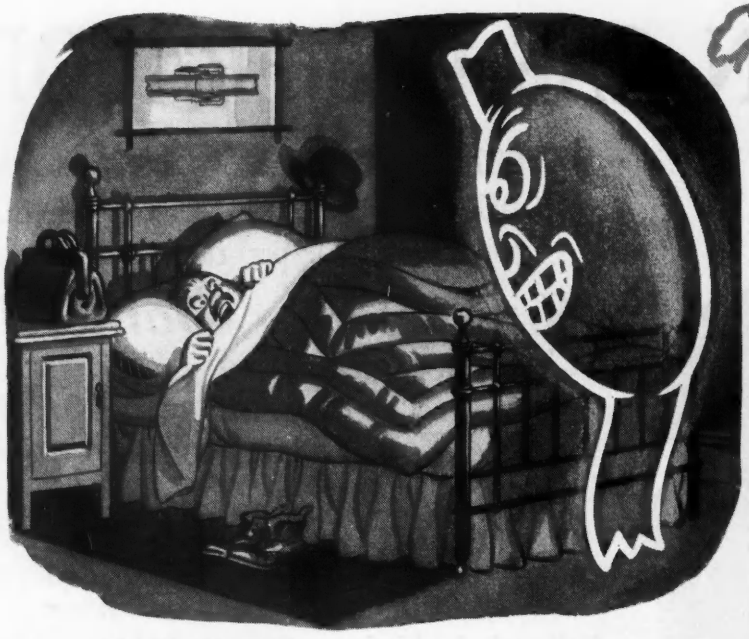

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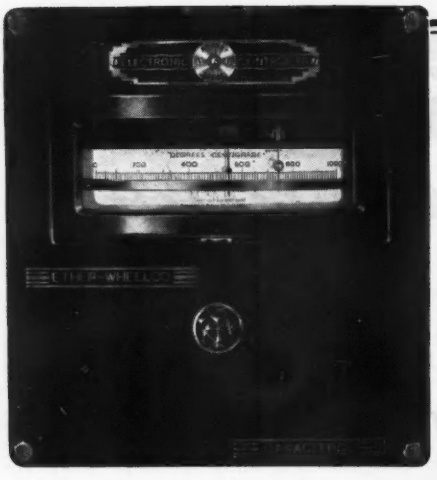

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This instrument utilises electronic action to achieve rapid and accurate control of furnace temperature. Supplied for On, Off, High, Low and Proportional Control.

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Indicate, Record and Control Gas Furnace Temperatures automatically. Made for Wall or Panel Mounting. Send for List No. 645.

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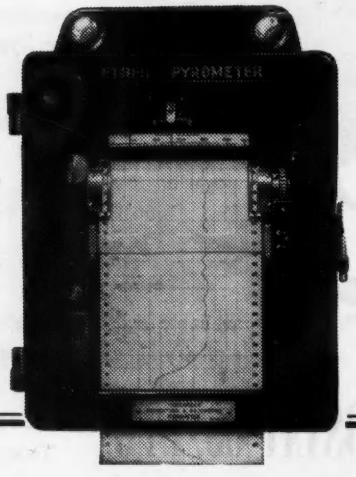

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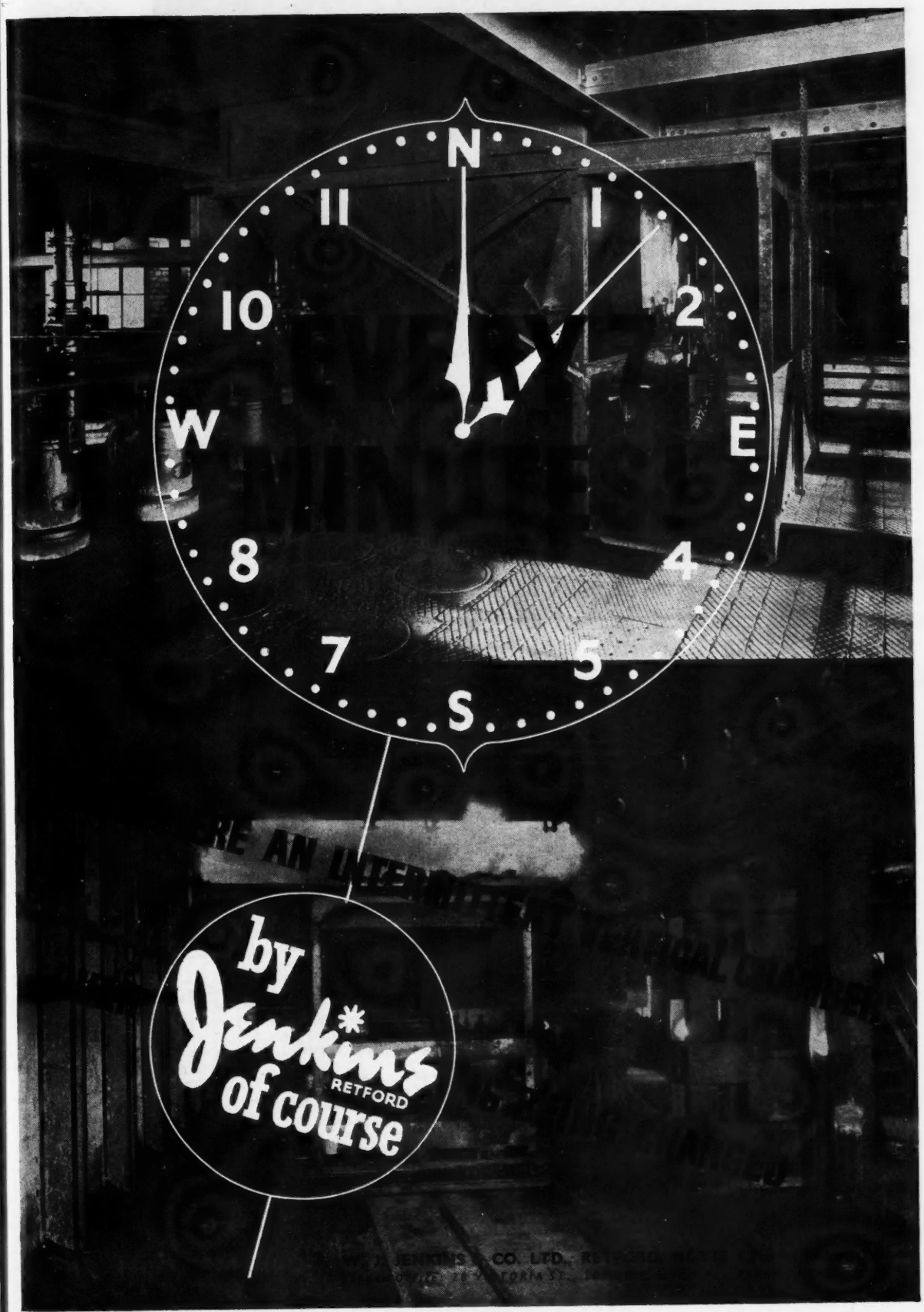
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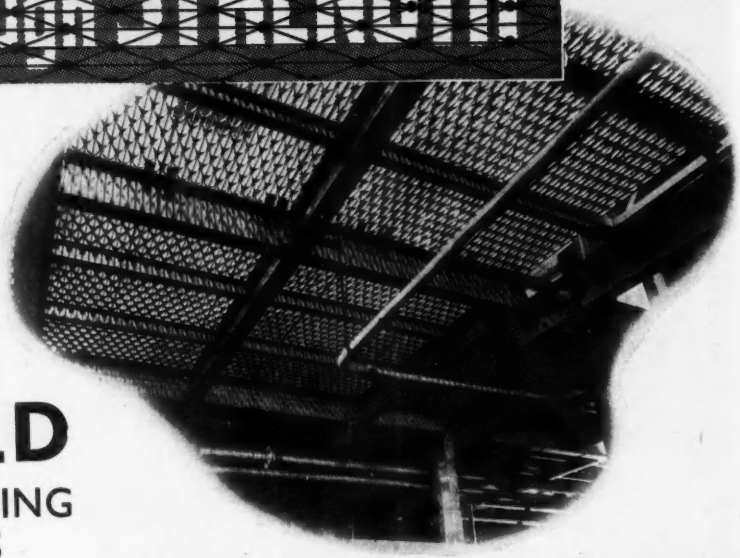
II
by Jenkins* RETFORD of course

LIGHT through STRENGTH

"and the strength is in the weld"



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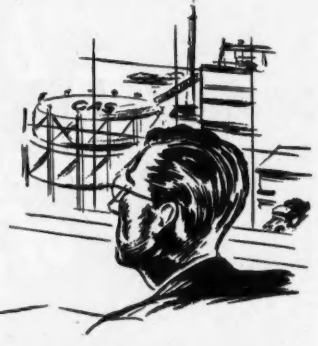

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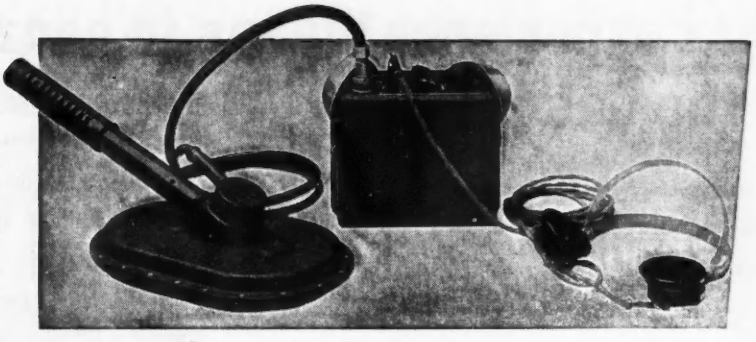

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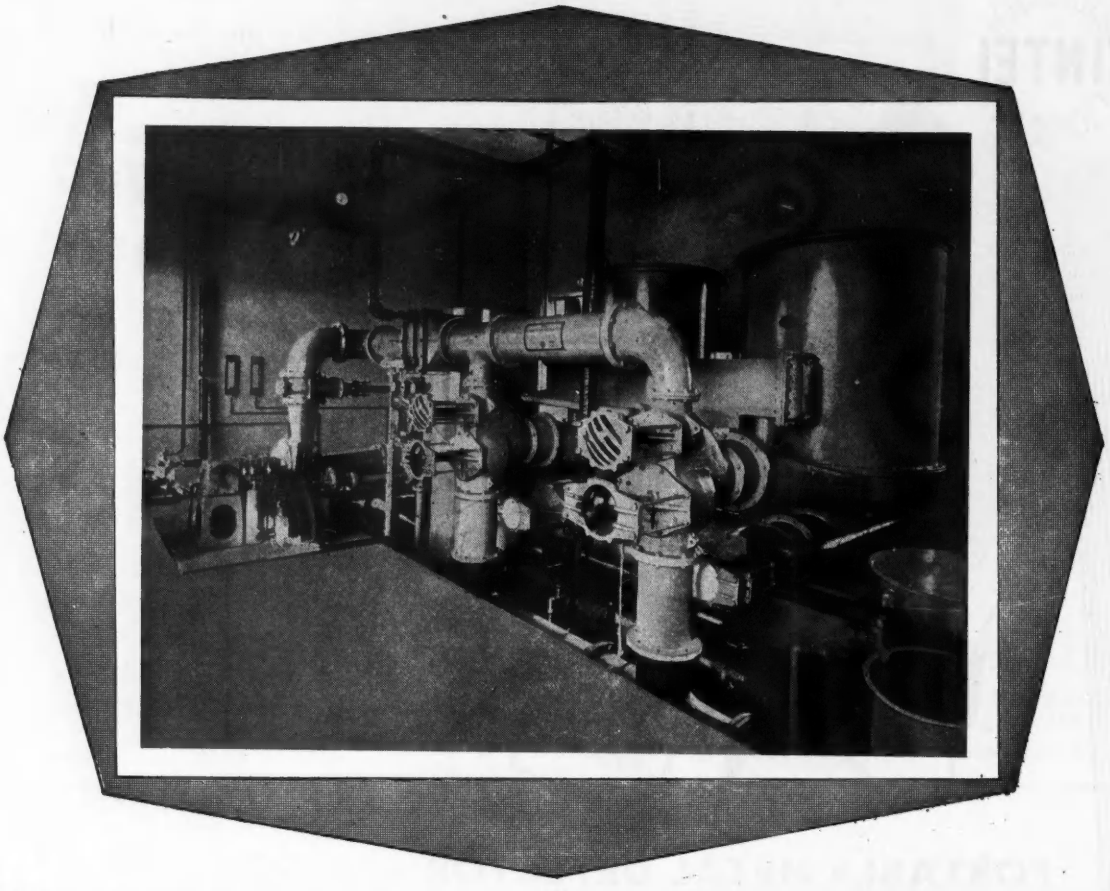

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The plant you see above is typical of many Sutcliffe Speakman plants already supplied to the Gas Industry.

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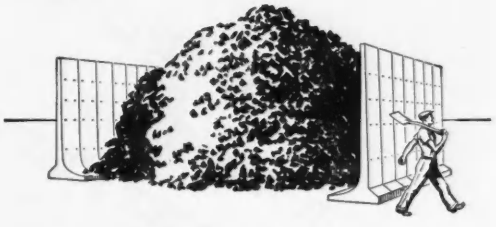
dirty carpet-losses—or



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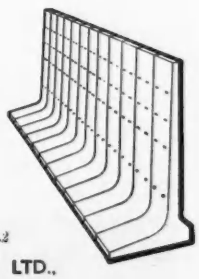

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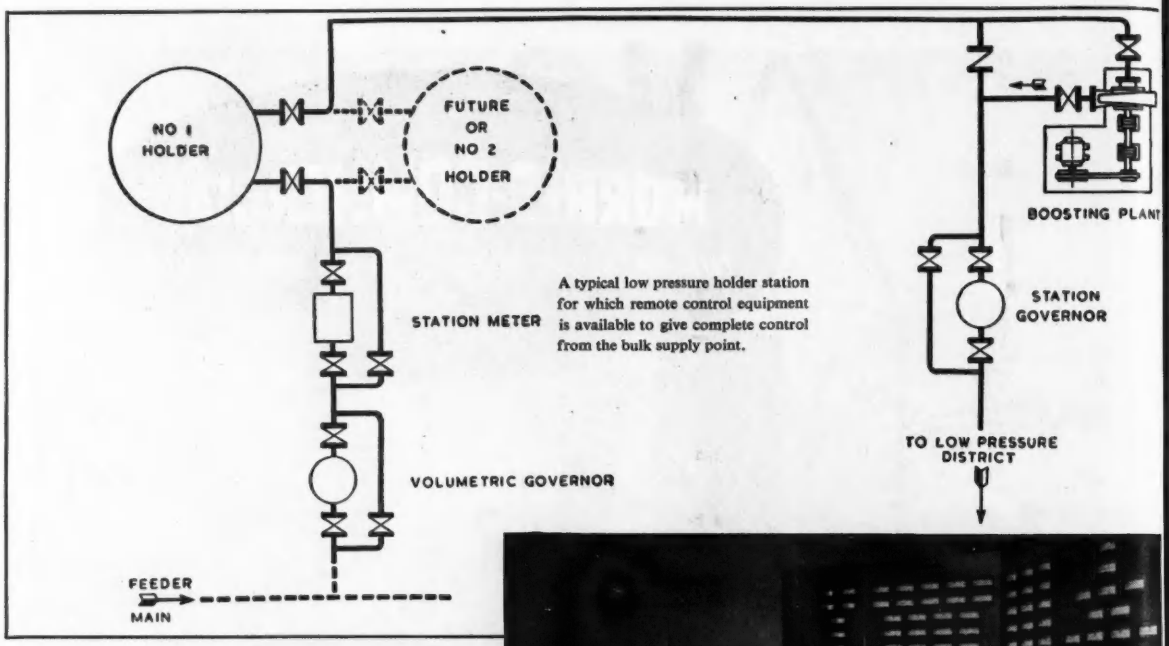
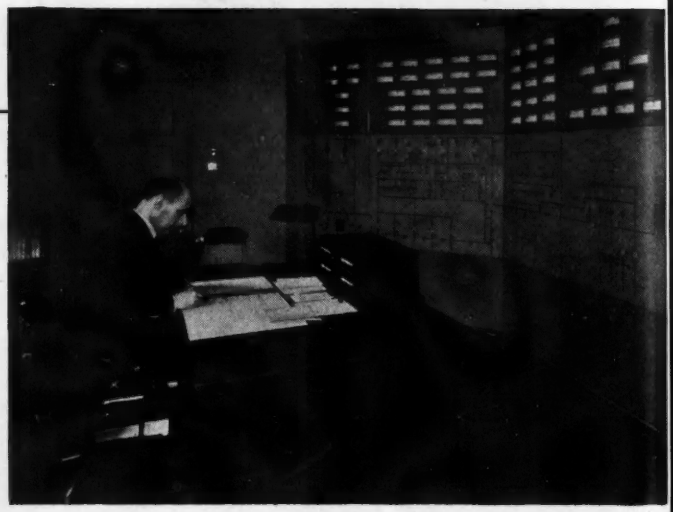


A typical low pressure holder station for which remote control equipment is available to give complete control from the bulk supply point.



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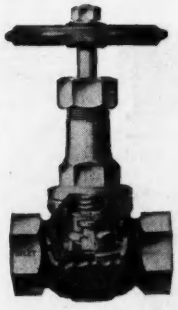
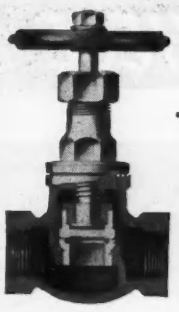
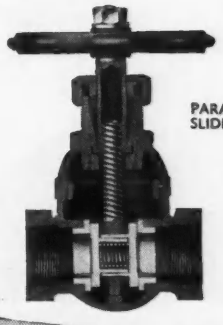


'S.T.S.' VALVE



PARALLEL-SLIDE LINK VALVE

PARALLEL-SLIDE VALVE



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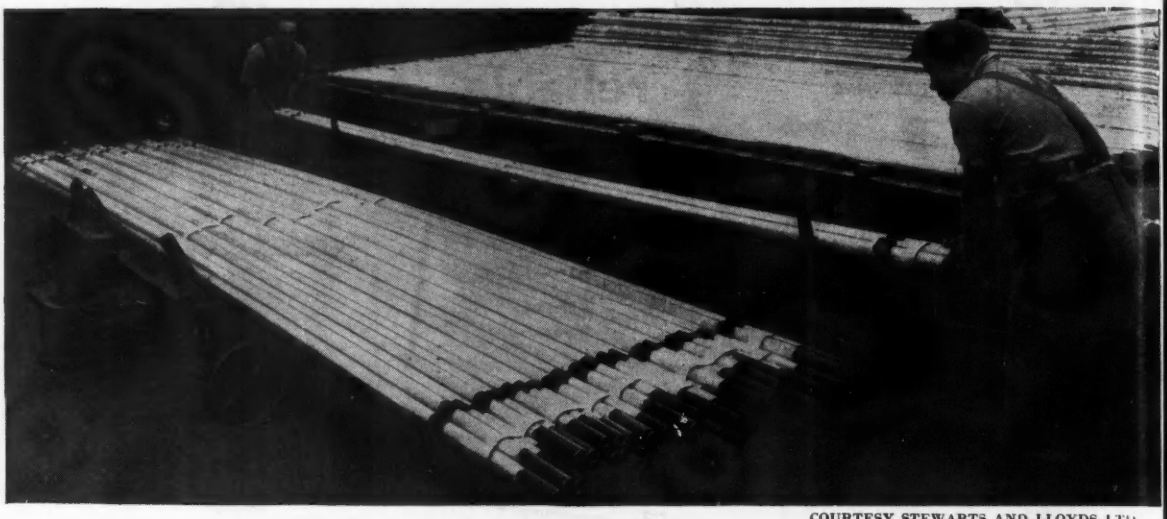

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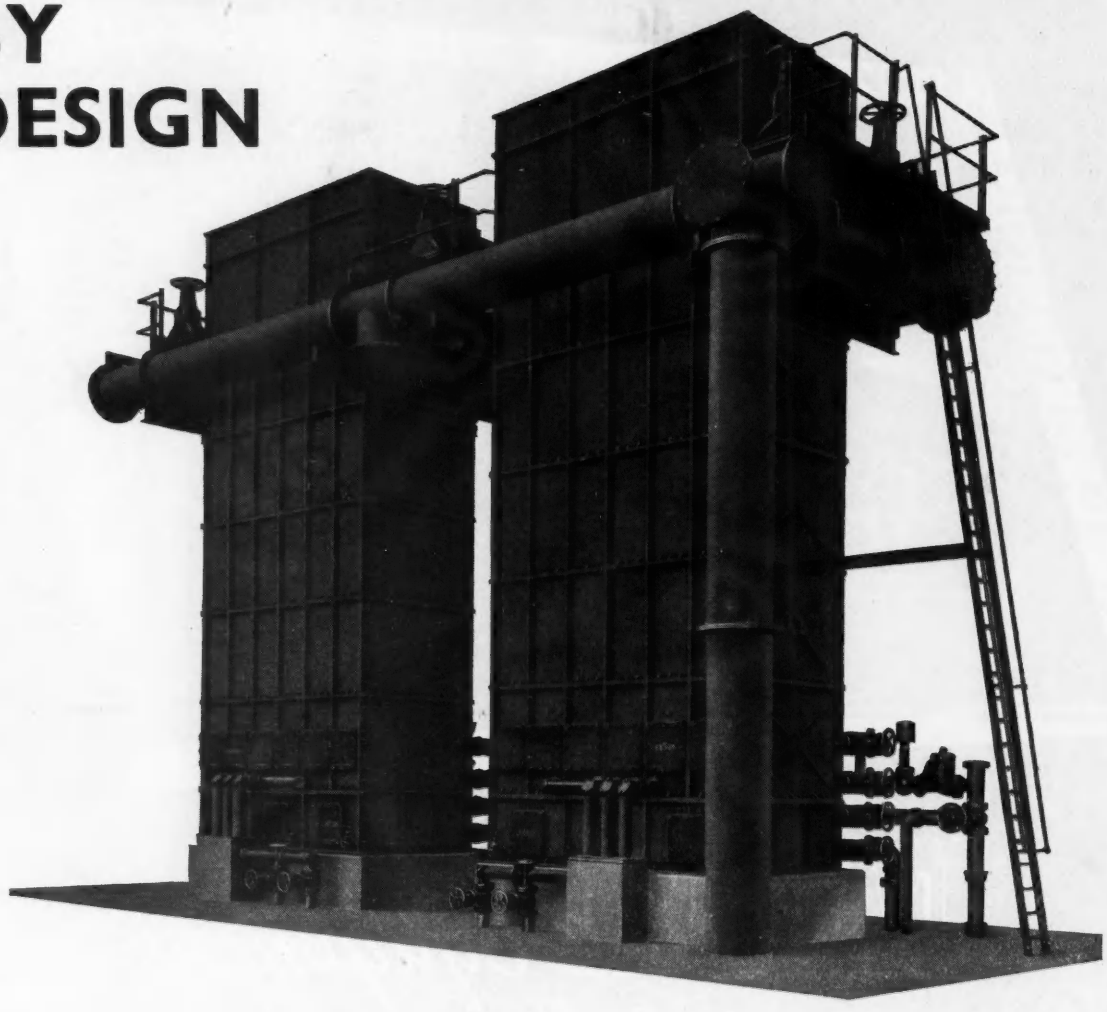

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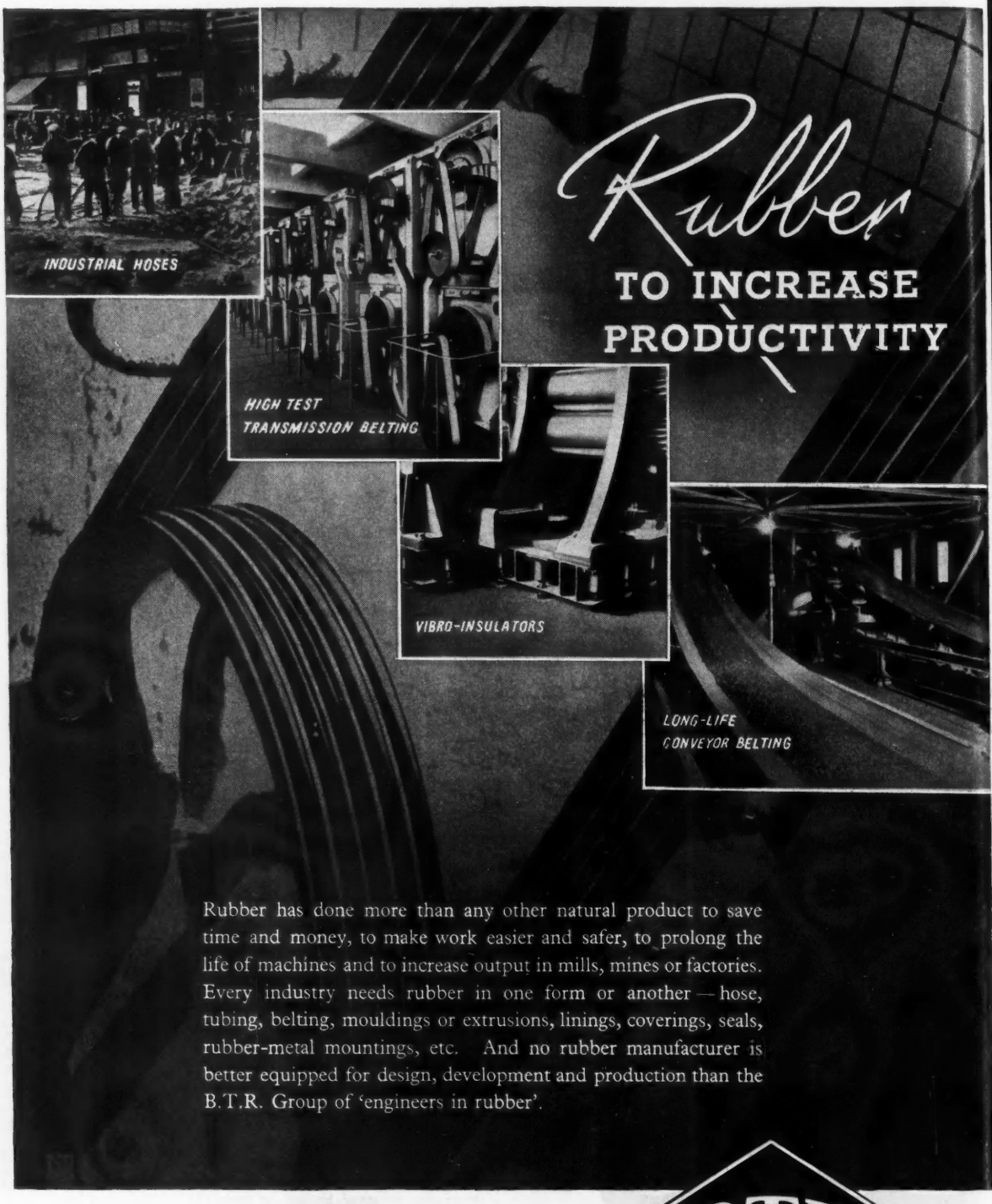

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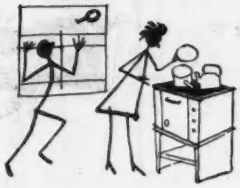
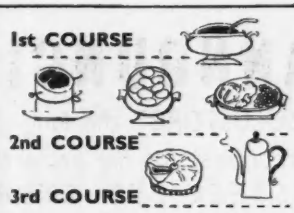


Goodbye, gas ring ! The Junior General can boil, roast and grill ; and its 2-shelf oven is grand for baking.



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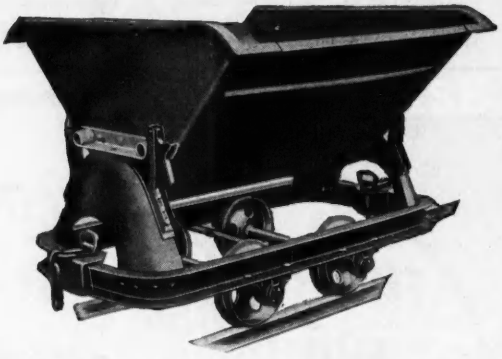

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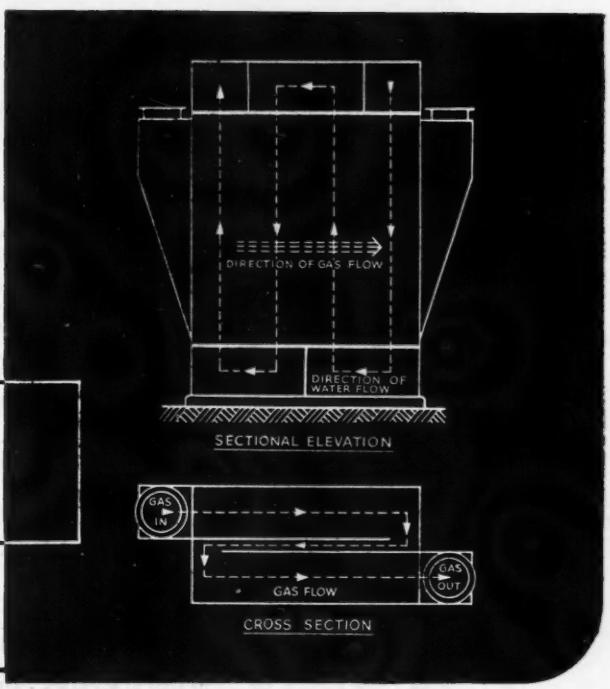

Diagrammatic arrangement of a Whessoe vertical tube horizontal gas flow condenser.

Technical publications are available on request, including "Whessoe Condensing and Cooling Plant" just published.

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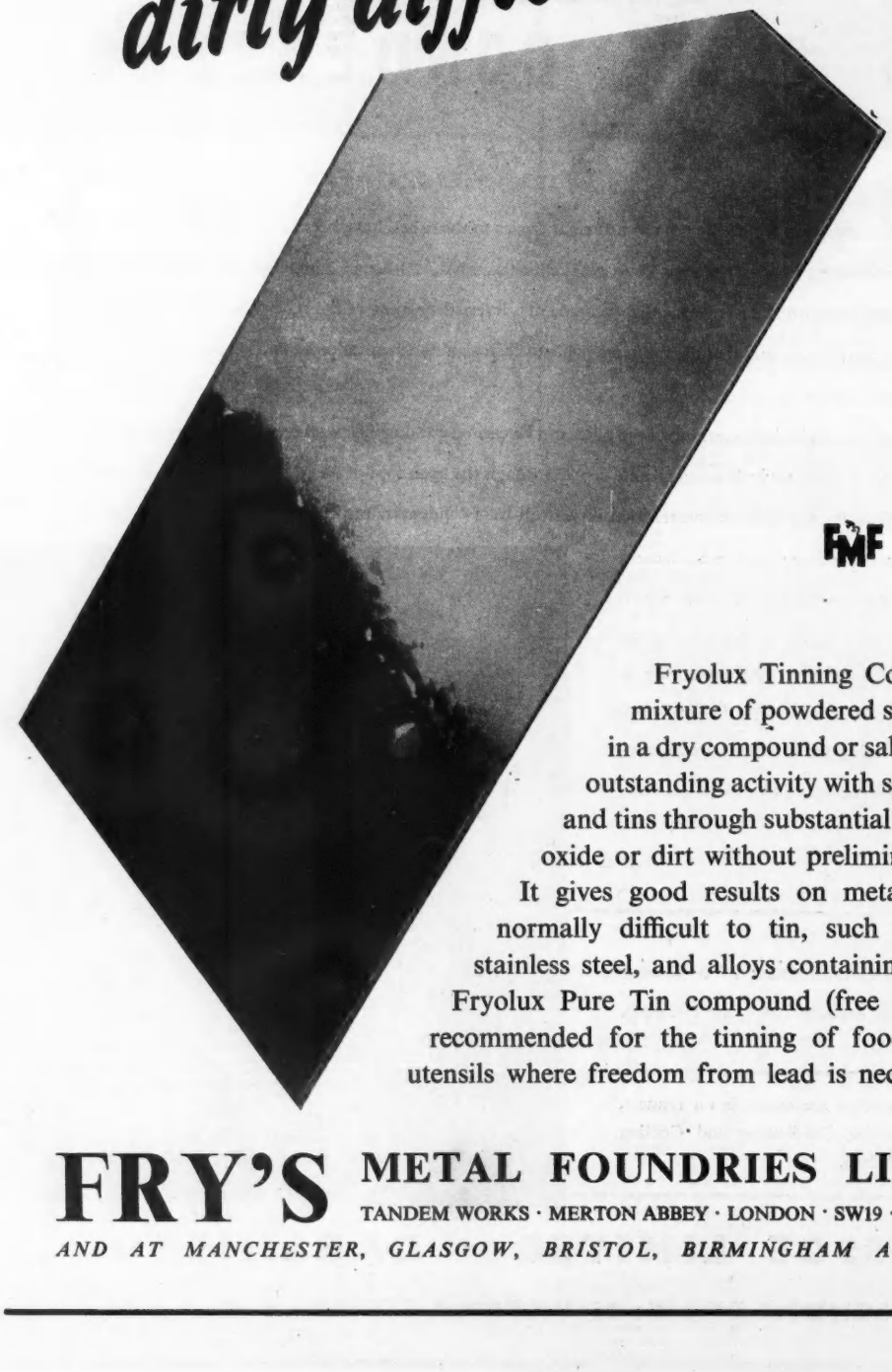

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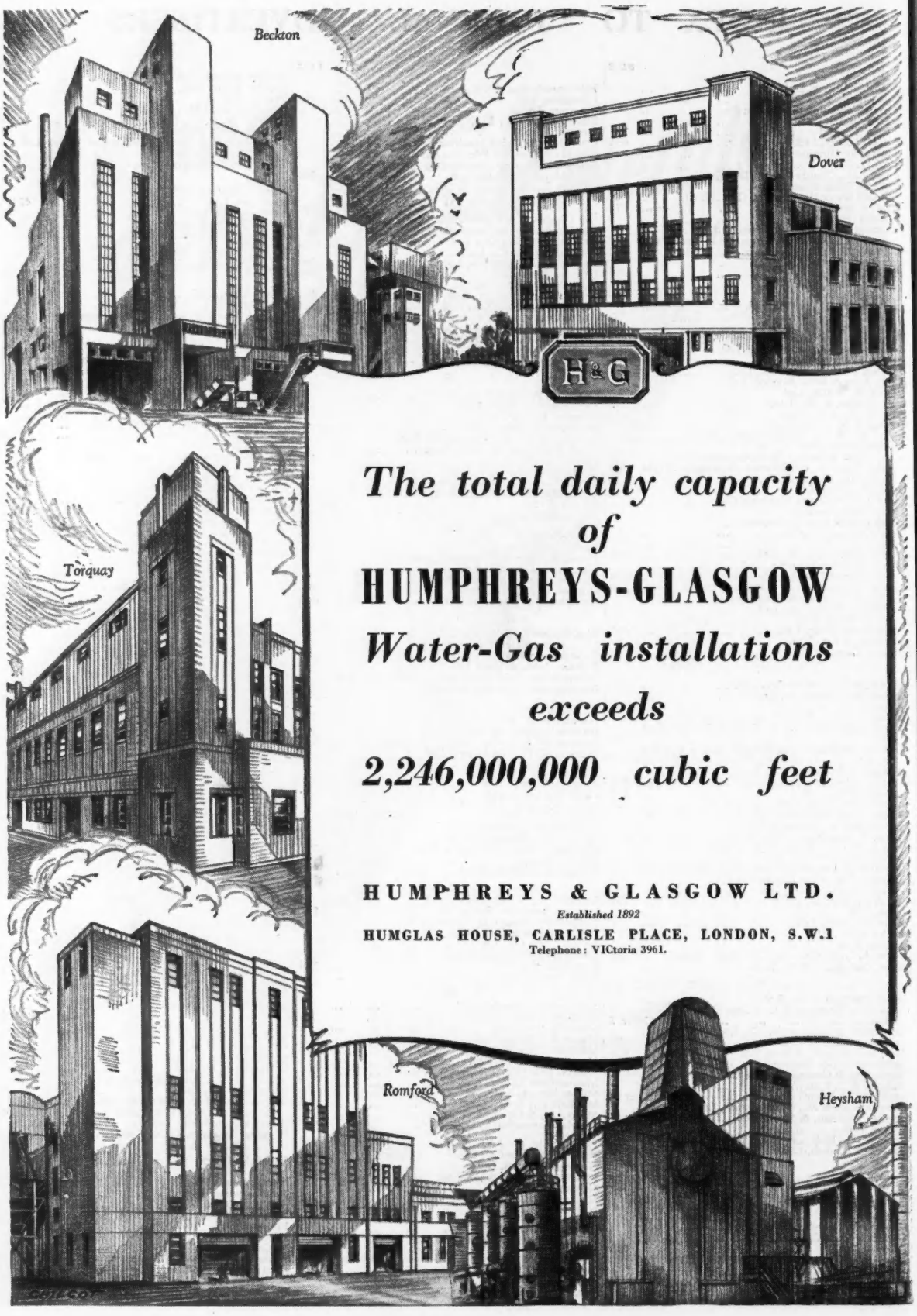

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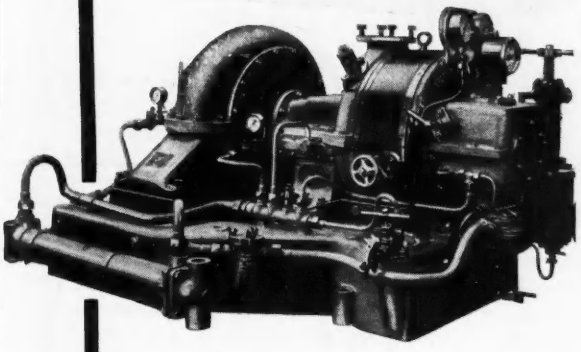

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GAS JOURNAL

VOL. 268. NO. 4615 103RD YEAR NOVEMBER 14, 1951

GASWORKS FOUNDATIONS

THE site of a gasworks is generally decided by factors among which the suitability of the subsoil to sustain heavy point loads must take second or third place. A low level relative to that of the area of supply is generally preferred. Proximity to means of transport by rail or water is frequently the governing factor. It is not surprising therefore that the load-bearing capacity of the chosen site is often poor to very bad. Seaside and estuary sites are often reclaimed marine marsh land. Nearly always gasworks structures must stand on the softer deposits which lie between ground level and the more permanent, older, compacter strata of the earth's crust. It has been said that the object of the foundation upon which a structure is built, particularly if it is of great and concentrated weight, is to interpose between its base and an underlying stratum which is sufficiently compact and permanent to sustain its weight 'an artificial rock' so that there may be either no subsidence at all or so little as to be negligible in its effect upon the stability of the structure. Mr. A. G. Bird, in his paper to the Eastern Section of the Institution of Gas Engineers, outlines the general considerations and methods on which sound foundation design and construction is based and relates some of his extensive experiences with gasworks foundations. He emphasises the growing demand on the civil engineer to cope with heavy point loads of which he gives several examples. 'Soil mechanics' is the name given to a rational study of the condition and properties of the sub-soil, its classification as cohesive or granular, its load-bearing properties and water content, its exploration by bore holes supplemented by trial holes in which the strata can be examined in detail.

The precise character of the foundation is determined largely by the proximity of a solid geological formation to the surface. If this is found at a relatively small distance below the surface nothing may be necessary beyond a layer of concrete below the base of the structure, extending no further than down to the firm stratum. If care is taken to see that the plane of junction between the concrete mass and the stratum on which it rests is horizontal and that the concrete itself is uniform and homogeneous and of the correct strength the work should be satisfactory. On the other hand if the good load-bearing stratum is situated at considerable depth there may be a case for the 'raft' foundation by which the load is, as it were, floated on subsoil of low bearing value. Mr. Bird underlines the necessity in the design and construction of the raft foundation and the structure above it to ensure that the loading of the raft shall be equally distributed not only after the completion but during the erection of the superimposed structure. The area of the raft and its disposition are determined by the load-bearing properties of the stratum on which it rests and by the necessity, to prevent tilting, to distribute the load evenly over the area covered. Where this latter requirement cannot be fulfilled it is advisable to divide the raft into independent sections so proportioned that the pressure is substantially the same on each. Sheet piling has been used round the edges of the raft to prevent spreading of soft subsoil. The maximum pressure must not of course exceed the safe pressure as ascertained by a test load. The proportions of the raft and the position and quantities of steel reinforcement are determined by the calculated bending moments in every direction.

Between these two extremes lie cases calling for piling or, if the depth of the solid formation is not too great, for piers built at intervals over which the load may be carried by ferro-concrete beams or slabs. For anything over, say, 20 ft. the pile is the basis of the most suitable foundation. Piles are almost indispensable when the top strata of the site consist of made-up-ground, weak clay, or thin layers of granular material

interspersed with clay. Great buildings in ancient times were successfully sustained on low load-bearing soils consolidated by timber piles. Timber has now been replaced by the new material, concrete or ferro-concrete, with very great advantages.

THE MODERN PILE

THE modern pile is classified into two major divisions, the pre-cast and the cast-in-situ. The disadvantages of the pre-cast pile are mainly two: its necessary length cannot be accurately determined, so that cutting to reduce it or splicing to extend it is required, and when its length is considerable it becomes cumbersome to handle and drive; even its strength must in some cases be governed by stresses in handling rather than those which will come upon it under load. Several designs of the cast-in-situ pile are extant. Perhaps the most interesting of these is the shell-increment pile developed by Mr. Bird's company.

Briefly, it consists of a reinforced concrete tube in prefabricated segments or shells, threaded on a mandrel which itself terminates in a solid driving shoe. The tube, mandrel, and shoe are driven together, new segments being added as required, until the bearing set is attained. The steel mandrel is withdrawn; the shoe and tube remain in the position to which they have been driven to the required set. The interior of the tube may then be examined, a light can be lowered in the tube for inspection, and steel reinforcement may be suspended within before the tube is filled with concrete constituting an unstressed solid core. The shells may be fabricated with an acid-resisting cement to protect the pile in corrosive soils.

Mr. Bird's paper evoked an exceptionally good discussion; one of those rare occasions when the atmosphere was captured of engineers 'swapping' experiences, than which nothing is more delightful—to the engineer, of course. It would be obvious to anyone, among the initiated, that foundation work is something more of an art than a science. Mr. Hughes even compared 'soil mechanics' with psychiatry. It is clear that nothing can completely take the place of good careful examination by the experienced eye supplemented by such severely practical full-scale tests as can be applied.

Mr. Bird himself contributed to the swapping of experiences by his interesting account of de-watering a site where much water was present in the sub-soil and by his recommendations for the design of the coal-breaker pit. As a mechanical-handling engineer himself he must have encountered many designs where complicated coal feeding and breaking machinery has been accommodated in large underground chambers. His two points are well worth careful consideration by engineers laying out new plant. First, if you must have all this plant below ground make your pit in one rectangular block with supports for the plant raised up within it. But, second, if you possibly can, get your unbroken coal up out of the pit to a breaker above ground where it can be readily seen and maintained in daylight. The discussion left no doubt that the subject of foundations is one of perennial interest to the engineer and more so to no one than to the constructional gas engineer.

INDUSTRIAL DESIGN

OF the various movements which have grown up since the second world war, few are more energetic than that which advocates 'good design'. The phrase is becoming overworked, and because it is often used in a somewhat condescending manner, we are getting rather tired of it. At the same time the determination of a small minority of artists and designers to upgrade the design of our homes, their contents, the tools of our trade, and every manufactured article from safety pin to steam roller, is slowly but surely gaining recognition.

Not so long ago manufacturers and business men used to boast that they knew what the public wanted. The authorities of design asserted firmly that they knew what the public ought to want. The public itself had little idea what it wanted. In the struggle to improve public taste the designers are slowly winning. They have overcome accusations that they are self-appointed authorities on what is good and bad and therefore their views are no better than the next man's. By means of publicity they have made their work known and even imbued it with a degree of glamour. Today the Council of Industrial Design has considerable status and has to its credit a remarkable record of accomplishment. Its principal achievement is that it has convinced a considerable section of industry that there is something to be gained by encouraging good design in its products; it is good business and it has a strong publicity appeal. Moreover, there are certain firms in most brancnes of industry—but particularly those producing domestic equipment—which have themselves devoted much care and expense to this question, and have found that there is not only a satisfaction in doing so, but there is also a corresponding improvement in sales.

If any doubts remain that this trend is continuing and, indeed, growing; sceptics are invited to study the programme of the Council's 1951 Design Congress, held at the Royal College of Art last month. This two-day event was international in character and was organised in association with such bodies as the Federation of British Industries, the Trades Union Congress, and various other bodies. The speakers, meeting to consider the question of 'design policy as a responsibility of high level management', all held the view that design is an executive responsibility and that good design flows rather from the co-operation of designers, engineers, and executives than from the inspiration of the solitary artist. The papers all followed a common pattern, the design policy of the particular firm being explained, and its devising, execution, and commercial importance briefly described.

With this beauty consciousness in the air, and with this insistence on aesthetic appreciation, it was pleasant to note that the gas industry was well to the fore. Dr. Harold Hartley's paper (read by Mr. F. A. Hooper) dealt in considerable detail with the design policy of the Radiation Group, and Mr. W. T. Wren did likewise for Allied Ironfounders, Ltd. The latter made an interesting point when he mentioned that the highly

praised Aga cooker 'had never had the hand of a professional designer upon it. Possibly in this case the original design of the cooker . . . was such in its pure functionalism' (another over-worked word) 'and simplicity that the action of clothing it became automatically simple and right.' So perhaps the designer will not have things all his own way in future. We hope not, for sympathetic as we are to the claims of the design fraternity, monopolies always have their drawbacks and, after all, the gas industry has achieved its present status more by the efforts of its engineers than by artistic collaboration.

'CONTRACTORS' AND THE JUNIORS

In his address as President of the Manchester District Junior Association of Gas Engineers, Mr. L. G. Townsend admitted that it is still regarded as inequitable that the Association should not admit to membership the staff of contracting firms serving the gas industry, and forming an integral part of it. This is probably the only matter on which the junior associations do not reach agreement. 'It says a great deal for the harmonious relations existing between the contracting firms and our Association that they accept this state of affairs and respect the principles on which our decision was made.' What precisely are those principles? We should like to see them stated unequivocally. Membership of the Association is based on the examinations of the Institution of Gas Engineers. The members, as Mr. Townsend emphasised, are charged with the task of encouraging juniors in the industry to acquire full membership. Granted the necessary qualifications, staff of contracting firms are not barred from membership of the industry's parent professional organisation. The 'contracting' side has added lustre as well as strength and knowledge to the Institution. It is as much a source of satisfaction to us as to Mr. Townsend that the junior associations maintain their individuality and are catholic in their aims. But we cannot subscribe to the banning of properly qualified 'contracting' personnel from membership of any one of these associations, and we are glad that in this respect what Manchester thinks today the rest of the country does not think tomorrow.

HIGH TAXATION

When oral evidence to the effect that evils arising from the weight of taxation could be overcome only if taxation on profits and income was reduced was given by Mr. S. P. Chambers on behalf of the Federation of British Industries to the Royal Commission on Taxation and Profits on November 1, Lord Justice Cohen pointed out that the party now in power was pledged to a form of excess profits tax and asked whether the Federation would welcome it if the reforms permitted some remission either of income tax or profits tax. Mr. Chambers replied that if E.P.T. was charged at the rate existing during the war —100%—he would definitely say it would be a bad tax, worse than the existing profits tax. The Federation would be inclined to agree that, if a case could be made out that there were excessive and fortuitous profits which arose solely from the rearmament drive, and if they could be segregated and entirely distinguished from profits which were due to inflation, then the taxation of that in place of the profits tax or part of the profits tax might well be a matter for consideration. Mr. Chambers went on to say that in the long run a long period of high taxation had a detrimental effect. In Britain we had had high taxes for a long period and in comparison with countries where the rates of taxes had been lower there had been a detrimental effect on the workers and on the attitude of mind of middle and higher executives. By comparison with 1939 the amount of fixed capital in industry is roughly unchanged, but liquid resources have shrunk. In relation to the total production of Britain, Mr. Chambers expressed the view that industry was in a weaker position than before the war, and the position could become perilous.

FUEL ECONOMY PAYS

The booklet just issued by the Federation of British Industries under the above title is all the more timely in that it coincides with Mr. Geoffrey Lloyd's gloomy picture of the country's coal position (see 'In Parliament' on another page of this week's *Journal*). The foreword by the Director General of the Federation almost echoes the statement of the Minister of Fuel and Power in forecasting a continuance for a long time to come of the present precarious balance between the supply and consumption of coal. Industry must consequently look largely to economy in the use of fuel rather than to greater supplies as a means of increasing production. The F.B.I. has condensed into this booklet the results of 25 years' experience in advising member firms on fuel efficiency problems. Some of the points may seem simple and obvious; but it is just such points which are most frequently overlooked.

The contents are divided into three main sections. The first deals with common faults in boiler operation and their remedies. The second deals with the use of instruments for measurement and control—a much neglected field for improvement. The third is concerned with the efficient use of heat, including thermal insulation. It concludes with recommendations for the recovery of heat contained in process effluents, vapours and condensate, and the exhaust gases and cooling water of auxiliary oil engines. In so brief a treatise only the main causes of waste and their remedies can be indicated. Each section has, therefore, a short list of useful relevant publications. The booklet may be obtained from the Federation's offices, 21, Tothill Street, S.W.1; price 2s.

Obituary

Alderman Thomas William Holiday, Chairman of the City of Durham Gas Company prior to nationalisation, has died at the age of 76. He was 'father' of Durham City Council and Mayor of Durham in 1925. Until nationalisation he was owner of Grange Colliery, Belmont, Co. Durham.

◇ ◇ ◇

Mr. Alan Sinclair, Managing Director of the British Tyre and Rubber Co., Ltd., and of the Silvertown Co., died on November 3 at the early age of 42. He had spent all his business life with the Company. After leaving Cambridge, he spent some years at the various factories of the group and was made a Director in January, 1937. He was President of the Federation of British Rubber Manufacturers' Associations in 1945/6.

◇ ◇ ◇

Mr. Ernest Hamilton, Showroom and Sales Manager of the Paisley undertaking of the Scottish Gas Board, died suddenly at the close of a Masonic service at Paisley on October 28, aged 51. Mr. Hamilton's service with the Paisley undertaking extended over 30 years. He was a past chairman of the Scottish Salesmen's Circle (Western District) and represented the Renfrewshire group on the Commercial and Sales Committee of the Scottish Gas Board.

Personal

Sir Leslie Boyce, the new Lord Mayor of London, was, prior to nationalisation, Chairman of Gas Consolidation, Ltd., and the Severn Valley Gas Corporation, and a Director of several of the gas companies whose financial and administrative control was co-ordinated by the holding companies.

◇ ◇ ◇

Mr. H. W. Bosworth, A.M.I.E.E., Chairman of Lancashire Dynamo Holdings, Ltd., and of Lancashire Dynamo & Crypto (Mfg.), Ltd., is to make an extensive tour of Australia and New Zealand, leaving this country on the liner Oronsay on November 21, returning via Panama in March of next year.

◇ ◇ ◇

Mr. H. J. Carter, M.B.E., D.F.C., of the North Thames Gas Board, is the new Hon. Treasurer of the British Road Tar Association (not Mr. H. J. Clarke, as mentioned editorially last week). Mr. Leslie O'Connor (National Coal Board) has, like Mr. W. K. Hutchison (Chairman of the South Eastern Gas Board) taken up a Vice-Presidency of the Association for the first time; the two Vice-Presidents represent coke oven and gas interests respectively.

◇ ◇ ◇

Sir James Moir Mackenzie, K.B.E., C.M.G., Deputy Director-General of the Federation of British Industries, has retired after 30 years' service. Sir Moir joined the Federation in 1919, three years after its foundation, as a member of the overseas staff, and has been specially associated with Empire trade and Empire affairs. He has, on the Federation's behalf, made many visits to Canada. He represented the F.B.I. at the Ottawa Conference in 1932 and, on the invitation of the Treasury, he accompanied the British Purchasing Mission which initiated war supplies in Ottawa in 1939.

◇ ◇ ◇

Mr. James McBain has retired from his position as Works Superintendent at the Halifax gasworks of the North Eastern Gas Board, after 24 years' service. Mr. McBain served in two world wars—being an inspecting engineer officer in the R.E. on the Nile River in the first and a major in the Home Guard in the second. He held an appointment with the Accrington District Gas and Water Board before going to Halifax. At a presentation high tributes were paid to him by Mr. James MacLusky, Engineer and Manager at Halifax, and others. Mr. T. E. Marshall, on behalf of all sections of the staff and employees, presented Mr. McBain with a wrist watch and electric razor.

◇ ◇ ◇

Members of the Manchester City Council Conservative group on November 5 presented **Alderman Sir William Kay,** for many years Chairman of the Corporation Gas Committee, with a gold wrist watch in recognition of his 50 years of unbroken service as a member of the council. On the following day, Sir William, who is a freeman of the city, was guest of honour at a civic lunch in Manchester Town Hall and received from the Corporation a tray made of Wythenshawe oak. He has been Hon. Treasurer of the Manchester Regional Industrial Council and was also Hon. Treasurer of the National Gas Council. Knighthood was conferred upon him in the Birthday Honours of 1922 in recognition of his public services. He was twice Lord Mayor of Manchester.

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Mr. R. T. Redfern, M.I.MECH.E., M.INST.GAS E., has been appointed Managing Director of the Bryan Donkin Co., Ltd., in succession to Mr. Lewis Seaman, who died recently. Mr. Redfern was made a Director in 1949, and has been General Manager of the firm since 1947. He joined the Company in 1937, as chief draughtsman, from the Sheepbridge Coal and Iron Co., and was appointed Works Manager in 1940. Mr. Redfern joined the Sheepbridge Coal and Iron Co. in 1911 as an indentured works apprentice, under the late Mr. Maurice Deacon, who was Managing Director of the firm at that time. He is a Vice-President of the Chesterfield and District Managers' and Foremen's Association. He was a part-time lecturer in mechanical engineering at Chesterfield Technical College for 20 years up to 1940. He is also a Director of George Waller and Son, Stroud, an associate company of the Bryan Donkin Co.

Mr. William Knox, B.S.C., ASSOC.M.INST.GAS E., Technical Assistant at the Tradeston works (Glasgow) of the Scottish Gas Board, has been appointed Senior Chemist to the Sunderland division of the Northern Gas Board and takes up his duties there on December 3. Mr. Knox was Technical Assistant to the Cambuslang and Uddingston district (Lanarkshire) from 1946 until March, 1950.

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The Kelvin Medal Award Committee, consisting of the Presidents of the Institutions of Civil, Mechanical and Electrical Engineers, the Iron and Steel Institute, and kindred bodies has awarded the Kelvin Gold Medal for 1950 to **Dr. Theodore von Karman,** F.R.S., Professor of Aeronautics and Director of the Guggenheim Aeronautic Laboratory of the California Institute of Technology, in recognition of eminent services to engineering science. The medal was presented on November 6 by Lord Runciman.

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Mr. Robert Ruggles, Engineer and Manager of the Radcliffe and Farnworth undertaking of the North Western Gas Board, left London by air on November 6 to take up an appointment as Chief Engineer and Assistant General Manager of the Bombay Gas Company. Starting as an articled pupil with the Luton Gas Company 20 years ago, he was appointed technical officer at the head offices of the United Kingdom Gas Corporation in 1938. Two years later he went to Leighton Buzzard as Engineer, Manager, and Secretary, and moved to Radcliffe and Farnworth in 1946. Before leaving for Bombay he was the recipient of the gift of a silver tea tray from the employees of the Radcliffe and Farnworth undertaking.

GAS COUNCIL RESEARCH COMMITTEE

ADDITIONS to the membership of the Gas Council Research Committee have been announced as follows—Mr. J. H. Dyde, President of the Institution of Gas Engineers; Mr. G. Le B. Diamond, C.B.E., Chairman of the West Midlands Gas Board; Professor F. H. Garner, O.B.E., Professor of Chemical Engineering, University of Birmingham, and part-time member of the West Midlands Gas Board; and Dr. F. J. Dent, Director of Research at the Council's Birmingham Station.

Mr. F. M. Birks, C.B.E., Deputy Chairman of the North Thames Gas Board, who was originally appointed by virtue of his position as President of the Institution, will continue to serve on the Committee.

The Committee was established in September of last year with the responsibility of advising the Gas Council on all matters connected with research, drawing up programmes, and reviewing progress from time to time. It was to consist of the Chairman and Deputy Chairman of the Gas Council as Chairman and Deputy Chairman; three eminent men of science not engaged in the industry; three members of the Council; the President of the Institution of Gas Engineers; the Livesey Professor at Leeds University and the Directors of the Gas Council Research Stations.

The Gas Council has now decided to invite each area board which administers a research station on its behalf to nominate its Chairman or Deputy Chairman as a member of the Committee. In response to this invitation the West Midlands Gas Board has nominated Mr. Diamond, and the North Thames Gas Board has nominated Mr. Birks.

Mr. Dyde takes his seat on the Commitee as the President of the Institution of Gas Engineers, and Dr. Dent as Director of the Birmingham Research Station. At the time of the Committee appointment only two of the three scientific members were appointed and the vacancy is now filled by Professor Garner.

The full membership of the Committee is:—Sir Edgar Sylvester, K.B.E., Colonel Harold C. Smith, C.B.E., Sir Robert Robinson, O.M., Sir Cyril Hinshelwood, Professor F. H. Garner, Mr. E. Crowther, C.B.E., Dr. R. S. Edwards, Mr. W. K. Hutchison, Mr. J. H. Dyde, Professor A. L. Roberts, Mr. F. M. Birks, Mr. G. Le B. Diamond, Dr. F. J. Dent, and Dr. H. Hollings, O.B.E.

Diary

Nov. 15.—Wales (South) Juniors: 'Design of Gas Mains Within a New Town Centre Reconstruction Scheme,' J. Nutton. Swansea.

Nov. 16.—Wales G.C.C.: Gas Offices, Bute Terrace, Cardiff, at 11 a.m.

Nov. 16.—Institution of Mechanical Engineers: Thomas Hawkesley Lecture, 'Some Fuel and Power Problems,' H. Roxbee Cox, Ph.D., Storey's Gate, S.W.1, 5.30 p.m.

Nov. 19.—Eastern G.C.C.: Connaught Rooms, 2 p.m.

Nov. 19.—North Eastern G.C.C.: Special Meeting, Bridge Street, Leeds, 2.45 p.m.

Nov. 20.—London and Southern Section, I.G.E.: 'Selling Gas to Industry,' N. R. Junkison. Deputy Divisional Manager, Headquarters Division, North Thames Gas Board; 17, Grosvenor Crescent, 2.30 p.m.

Nov. 20.—Institute of Fuel: 'Automatic Control Systems for the Coal Feed of Gas Producers,' S. A. Burke and G. A. Sparham; Institution of Mechanical Engineers, Storey's Gate, 5.30 p.m.

Nov. 21.—Eastern Juniors: 'Some Aspects of the Design and Construction of Gasworks,' R. F. Robinson (Watford). Rose and Crown Hotel (Wisbech), 2.15 p.m.

Nov. 21.—London and Southern Juniors: Visit to Bratt Colbran, Ltd., Wembley.

Nov. 21.—London and Counties Coke Sales Circle: Visit to Southend works (leaving Fenchurch Street 10 a.m.), followed by lunch, Palace Hotel, and talk by D. G. Rose, Coke Manager, North Thames Gas Board, 2.15 p.m.

Nov. 23.—North of England Section, I.G.E. and Northern Juniors: Joint Meeting, Middlesbrough. Report of Sub-Committee on Unaccounted-for Gas (which will be formally presented without discussion at the Autumn Research Meeting) will be presented for discussion by F. Bell (Liverpool), Member of the Sub-Committee.

Nov. 24.—Yorkshire Juniors: 'Lubrication as Applied to the Gas Industry,' H. E. Priston, PH.D., B.SC., A.R.I.C. (Shell Mex and B.P., Ltd.), preceded by films 'Birth of an Oilfield' and 'Oil and Industry.' Bradford.

Nov. 27-28.—Institution of Gas Engineers: Autumn Research Meeting at the Institution of Mechanical Engineers, Storey's Gate, S.W.1.

Nov. 27.—Scottish Juniors (Western): Evening visit to George Dobie & Co., Ltd., Paisley.

Nov. 27.—Society of Instrument Technology: 'The Visual Presentation of Instrument Data,' K. F. H. Murrell, M.A., F.R.P.S. (Royal Naval Scientific Service). Lecture Theatre, Royal Society of Tropical Medicine and Hygiene, Portland Place, W.1, 7 p.m.

Nov. 29.—North Thames G.C.C.: Westminster City Hall, Charing Cross Road, 2.30 p.m.

Dec. 1.—Manchester Juniors: 'Large Scale Cooking', C. H. Longley (Industrial Section, Liverpool); visit to Wavertree Works and Central Laboratories of Liverpool Group.

Dec. 3-7.—Smithfield Show and Agricultural Machinery Exhibition, Earls Court, (Gas Council exhibit).

Dec. 4.—South Eastern G.C.C.: Caxton Hall, Westminster, 2 p.m.

Dec. 5.—London and Southern Juniors: Reception and Dance, Caxton Hall, Westminster, 6.30 p.m.

Dec. 5.—Wales Juniors (North): 'Gas in the Baking Industry', J. A. W. Stretton, Wrexham.

Dec. 8.—Western Juniors: 'Transport,' A. G. Thorne, and visit to Bath gasworks; Silver Jubilee celebrations.

Dec. 8.—Scottish Juniors (Eastern and Western):—Joint meeting, 'Power Generation in Gasworks,' W. A. Train (W. H. Allen & Son, Ltd., Bedford), Heriot Watt College, Edinburgh, 3 p.m.

Dec. 11.—Wales Juniors (South): Students' Paperette Day, Cardiff.

INSTITUTION OF GAS ENGINEERS

THE autumn research meeting of the Institution of Gas Engineers will be held at the Institution of Mechanical Engineers, London, on November 27 and 28. The following programme has been arranged:—

November 27.

10 a.m.—Statement on the Organisation of Research, by Colonel Harold C. Smith, C.B.E., D.L., J.P., HON.M.INST.GAS E. (Deputy Chairman of the Gas Council and Chairman of Council of the Gas Research Board.)

10.30 a.m.—Presentation, without discussion, of the Report of the Sub-Committee on Unaccounted-for Gas. (*Comm. No.* 380.)

10.35 a.m.—Presentation and discussion of the 12th Report of the Chairmen's Technical Committee. (*Comm. No.* 391.)

11.05 a.m.—Presentation and discussion of the 28th Report of the Gas Education Committee. (*Comm. No.* 392.)

12 noon.—Presentation of Diplomas.

12.05 to 12.10 p.m.—Presentation, without discussion, of the Fifth Arthur Duckham Fellowship Report: 'Some Aspects of the Mechanism of the Gasification of Carbon by Carbon Dioxide and Steam,' by J. D. F. Marsh, B.A., B.SC. (*Comm. No.* 393.)

3 p.m.—Presentation and discussion of two short papers:—

(i) 'The Measurement of Coal Travel in Continuous Vertical Retorts by Means of Radioactive Tallies,' by C. H. Lewis, M.SC., M.INST.GAS E., Research Department, North Thames Gas Board. (*Comm. No.* 394.)

(ii) 'A Magnetic Oxygen Recorder for the Automatic Control of a Catalytic Purification Plant,' by R. H. Griffith, D.PHIL., Senior Research Chemist, North Thames Gas Board. (*Comm. No.* 395.)

4 to 5 p.m.—Presentation and discussion of a paper on 'The Production of High Temperatures in Industry by Town Gas,' by R. F. Hayman, B.SC., M.INST.GAS E., F.R.I.C., A.M.I.CHEM.E., Industrial Gas Development Officer, North Thames Gas Board (*Comm. No.* 396.)

November 28.

10 a.m.—Presentation and discussion of:—

(i) 42nd Report of the Refractory Materials Joint Committee: 1950-51. (*Comm. No.* GRB 62.)

(ii) Paper on 'Gasworks Refractories—Taking Stock,' by A. T. Green, O.B.E., D.SC., HON.M.INST.GAS E., Director of Research, British Ceramic Research Association, and T. F. E. Rhead, M.SC., M.INST.GAS E., Chairman, Refractory Materials Joint Committee, Gas Research Board. (*Comm. No.* 400.)

10.45 a.m.—Presentation and discussion of a short paper on 'Recovery of Pure Sulphur from Spent Oxide,' by W. B. S. Newling, M.A., and F. A. Burden, PH.D., Research Department, North Thames Gas Board. (*Comm. No.* 397.)

11.15 a.m.—Presentation and discussion of a report on 'Investigations into the Stress-corrosion Cracking in Welded Gas Mains,' submitted by the British Welding Research Association. (*Comm. No.* 398.)

12.15 to 12.20 p.m.—Presentation, without discussion, of a paper on 'Target Impact Gas Burners,' by W. A. Simmonds, B.SC., A.INST.P., and A. L. Willett, B.SC., A.C.G.I., Gas Research Board. (*Comm. No.* GRB 65.)

2.30 p.m.—Presentation and discussion of a paper on 'The Entrainment of Air by Flames,' by W. A. Simmonds, B.SC., A.INST.P., and M. J. G. Wilson, B.SC., A.R.I.C., D.I.C., Gas Research Board. (*Comm. No.* GRB 61.)

3.15 p.m.—Presentation and discussion of a paper on 'Investigations into a New Method of Effluent Liquor Purification,' by C. Cooper, M.SC., M.INST.GAS E., M.I.CHEM.E. (Director and Head of Technical Department), and W. E. Bouch, B.SC. (Research and Development Department), W. C. Holmes and Co., Ltd. (*Comm. No.* 399.)

4.15 p.m.—Presentation and discussion of a paper on 'The Treatment of Gasworks Liquor in admixture with Sewage in Percolating Filters,' by W. H. Blackburn, PH.D. (Gas Research Board), and T. G. Tomlinson, M.SC., and T. H. Summers (Water Pollution Research Laboratory, D.S.I.R.). (*Comm. No.* GRB 63.)

Eastern Section, I.G.E.

The decision of the Eastern Section of the Institution of Gas Engineers, as recorded in last week's report of the meeting held in London on October 31, to hold four meetings during the 1951-1952 session is not such a drastic departure as our abridged report of Mr. T. C. Battersby's announcement made it appear.

Mr. J. Hunter Rioch, Hon. Secretary and Treasurer of the Section, reminds us that it was the former Eastern Association of Gas Engineers and Managers which used to meet only twice a year. In the first year of its incorporation as a Section of the Institution under the energetic Chairmanship of Mr. H. H. Redwood, it held an additional meeting, making three in the year.

As Mr. Battersby said at the meeting in London a fortnight ago the Management Committee felt there was so much to be discussed within the industry that the Section should meet even more frequently.

The Mayor of Kettering (Alderman C. E. Goode) performed the opening ceremony at the East Midlands Gas Board's exhibition of household gas appliances, which opened at the Central Hall, Kettering, on November 5. He was introduced by Mr. P. T. Harris (Kettering Group Manager) and the first day's programme included a cookery demonstration by Miss F. J. Sparrow, home service adviser, of Northampton. The exhibition remained open daily until November 8.

An Application from 50 out of the 58 tenants on the Silloth Estate for a supply of gas for cooking purposes in place of electricity, which they stated was too dear, has been turned down by the Wigton (Cumberland) Housing and Planning Committee. It was reported that the Northern Gas Board wanted 65s. per house for laying the necessary mains. It was pointed out that the houses already had a solid fuel range and electricity, and a third type of cooking arrangement should not be provided.

Work is in Hand on a £2 mill. coke oven plant expected to be completed in two years' time at Fishburn (Co. Durham) for the National Coal Board. When in operation the plant will produce 250,000 tons of coke, 15,000 tons of tar, 4,000 tons of sulphate of ammonia and 1 mill. gal. of benzole per annum. The contractors are Woodall-Duckham, Ltd. About 200 men are working on the job, and it has been necessary to remove over 100,000 cu.yd. of earth and in certain places fill in the site to a depth of 20 ft. In order to stabilise the foundations more than 1,000 piles, 50 ft. long, have been driven into the ground. The construction of the plant will involve the use of 3,000 tons of refractory bricks, 10,000 tons of cement, and 6,000 tons of steel. There will be 50 ovens, and these will replace the present 30-years-old plant at Fishburn and another 40-years-old plant at Thrislington. About 1,000 tons of coal, mainly from Fishburn Colliery, will be used each day. A supply of coke oven gas will be taken from the plant by the Northern Gas Board.

PROGRESS IN THE SOUTH WEST

THE progress, since nationalisation, of the gas industry in the south west was outlined by Mr. C. H. Chester (Chairman of the South Western Gas Board) at an informal luncheon at Taunton on October 26 given to the Mayor (Mr. F. G. Dowell), the Deputy Mayor (Mr. W. F. Haywood), and senior officials.

An essential feature of the organisation, said Mr. Chester, was that it was a decentralised body, in as close a contact with the consumer as possible. The Board had built it up on their own initiative. Politics had no room in the organisation which was simply and solely for service of a gas supply; they had received no interference. They were out to see that gas was supplied at the cheapest possible price consistent with the best possible service. The Board had taken over more than 100 undertakings. Some had been efficient, others had been very inefficient in the quality of gas, service to the public and the price they charged. A big percentage, even some of the larger undertakings, had been on an unsound basis.

'One of the prime reasons,' he said, 'was that nationalisation took place immediately following a war. During the war, and a year or two afterwards, it was impossible to get material and labour to maintain—never count extend—the gas manufacturing and supply departments of the industry. As a result, most of the undertakings fell into disrepair.'

During the second year of their work, the industry, using 3% less coal, had supplied 5.2% more gas, more coke, and a greater percentage of other products. Together, they represented well over a third of a million pounds. One-and-three-quarters of a million pounds worth of gas appliances were sold. On vesting day they were selling cookers at the rate of 1,200 a month. Nearly eight weeks ago they had reached over 5,000 a month.

'We think competition is good for us,' went on Mr. Chester. 'It keeps our price level right. And no decision should be made by a local authority which restricts any tenant of a council house. They should have freedom of choice, and we have no fear of the answer.'

About £122,000 had been saved in wages and materials, etc., and the effect of the year's savings meant that if efficiency had not increased gas would now be 1d. a therm dearer, compared with vesting day. It represented half-a-million pounds over the year. They were not, however, content to rest on these achievements. They had not, by any means, reached the limit of savings.

Gas Board Prizes

Two of the competitions to be held at the Royal National Eisteddfod of Wales, Aberystwyth, 1952, which are arousing great interest are those in the architecture section. The competitions invite designs for a chapel for a small town in Cardiganshire to accommodate a congregation of 300, and an Art Gallery for the display of 100 pictures.

Modern Wales is not lacking in would-be architects of the future as the Secretary of the Eisteddfod, Mr. Dafydd M. Jones, has received numerous applications for the details—*viz.*, site plan and requirements of these two competitions.

The prize offered is £50 in each case and these prizes have been presented by the Wales Gas Board.

LANCELOT WORKS VISITED

Mr. J. S. Smith and Mr. E. J. C. Dixon, Assistant Secretaries, Gas Division, Ministry of Fuel and Power, recently paid a visit to the works of Bratt Colbran Ltd., at Wembley. Our photograph was taken during a pause in a tour of the works, in the course of which the visitors inspected the many processes carried out. Here they are at the test bench for 'Portcullis' gas fires. The photograph shows (left to right) Mr. R. H. Lewis (General Sales Manager), Mr. E. C. Bratt (Joint Managing Director), Mr. I. D. Cuffe (Works Manager), Mr. J. S. Smith, and Mr. E. J. C. Dixon.

LET'S LOOK AT KITCHENS

—*said the Gas Council*

NO aspect of home management makes a stronger appeal to the average woman than kitchen planning. That this was recognised long ago by the gas industry has been revealed by the frequent use of this publicity gambit at exhibitions, in publications, etc. The latest addition to the already formidable collection of works on the subject is a new Gas Council lecture and film strip entitled 'Let's Look at Kitchens.'

On November 7, at Film House, Wardour Street, W.1, we had an opportunity to sample both. The Gas Council has published excellent lecture notes, but on this occasion Miss Marjorie Lovell Burgess, the Council's Lectures Officer, scorned a script in her very competent presentation.

Mr. R. J. Gregg, Publicity Manager, wrestling with a somewhat unresponsive audience consisting of members of leading women's organisations, domestic science colleges, training corps for girls, etc., played a trump card by bringing on to the stage Gilbert Harding, of B.B.C. fame.

Presumably Mr. Harding had merely been asked to be himself and direct his remarks roughly in the direction of cooking. His querulous views had the desired effect, bringing forth gasps of delighted outrage. 'The older I grow,' he said, 'The more certain I become that I can cook better than most women. It is a constant source of astonishment to me that the most inoffensive and kindly people can take good meat and vegetables and make a complete mess of them.' At the present time—a period known to politicians as peace—the art of manners was sadly neglected.

Thank the Cook

We no longer said grace, observed Mr. Gilbert Harding, but if we did not thank God, we might at least thank the cook, if she deserved it. His own cooking experience, he explained was gained as a result of grim necessity rather than inclination. The fact that the Gas Council had asked him to speak at this gathering did not imply that he was devoted to the Gas Council; indeed, he was not particularly keen on nationalised industries at all. At the same time he could truthfully say that the only time he had used an electric cooker he had made an awful mess of it. He had been misled by a cookery book which referred to residuary heat. With this residuary heat he had been encouraged to cook a rice pudding. The result had destroyed his faith not only in residuary heat, but to a large degree, in rice pudding too.

If Mr. Harding's presence was in the nature of a pleasant shock, the appearance of Philip Harben, the television cook, was no less pleasant because it was anticipated. His personality is infinitely soothing and inspiring of confidence, but perhaps encouraged by his provocative predecessor, he made one statement which was a little surprising in the view of the circumstances. Referring to an illustration of one of the earliest gas cookers, he said: 'Basically, the culinary efficiency of that old cooker has never been surpassed. Manufacturers have made cookers nice to clean and nice to photograph, but they do the job no better than the earliest models.'

Also making a brief appearance on the stage, Dame Vera Laughton Mathews commented on her pride in the various educational enterprises sponsored by the Gas Council. The modern housewife, she said, was both more vocal and more technically minded than the housewife of yesterday, and it was right that she should thus take the major decisions in the provision of an easy-to-run kitchen.

In the course of her lecture, Miss Lovell Burgess described how conditions had changed, resulting in the housewife of today having to do much of the work in the house, without assistance, and also without resentment. The kitchen was now the hub of the house and no longer relegated to the back basement where it was neither seen nor heard. The housewife demanded labour-saving methods of cooking, colour, and even music; and since most kitchens were the wrong size and shape, she demanded advice on how to make the best of them.

Her talk dealt with the correct sequence of cooking operations, serving up, clearing away, washing up, and so on, with a description of some of the modern appliances available to make work as easy as possible. It was illustrated by a film strip which left a good deal to be desired. Apart from inadequate projection facilities, the photographs shown had a curiously dated appearance, and although they, admittedly, emphasised the points made, they invited criticism on several counts. The strip did scant justice to a highly skilled lecturer for whom it may be said that her talk had a good reception despite this handicap.

The morning's programme concluded with the screening of 'What's Cooking?' the Gas Council film reviewed in our columns a few months ago. Second thoughts suggested that Mr. Harben was even better than we had at first supposed while further familiarity with the Terry Thomas-Michael Bentine antics bred something closely resembling contempt.

A Cooker is Born

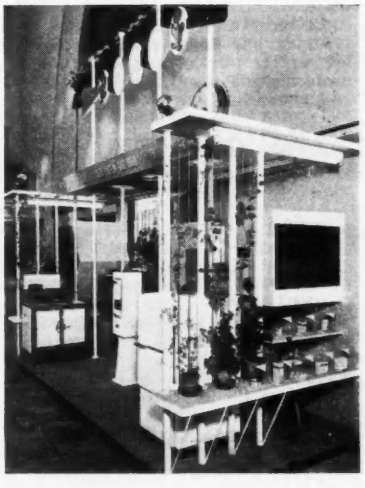
The October issue of the *De La Rue Journal* devoted two pages to the story of the firm's G.4 gas cooker and the very searching tests it had to undergo before it was passed for general production.

The laboratory played an important part in the life of the G.4, as it has done in the development of other De La Rue cookers. This cooker was evolved at the request of the East Midlands Gas Board, to whom the present output is being sold. When working prototypes were complete a 'life test' was made under which taps were switched on and off by clock mechanism for several weeks. A prototype was also sent to the East Midlands Gas Board who, after conducting its own tests, agreed to its design, which it had stipulated should be basically of cast iron, good looking, tough enough to stand up to heavy handling, and reasonably priced.

After testing was complete final drawings were passed to the production department at Warwick, which quickly set about the intricacies of making a new product. The G.4 is now engaging the Warwick factory full time at top speed, and the works are being enlarged to accommodate the extra plant necessary to increase output.

Instructions Have Been Given by the Doncaster Corporation to fight the claim of the East Midlands Gas Board for the sum of £10,631, representing the Corporation's gas fund surplus on the nationalisation of the local gas undertaking.

NURSING EXHIBITION



'On Duty or Off, They Look to Gas,' was the theme of the exhibit staged by three London Area Gas Boards (Eastern, North Thames, and South Eastern) at the recent Nursing Exhibition at Seymour Hall, London. The stand was designed by the North Thames Gas Board's display section. The gas appliances displayed included a hot closet, an instrument steriliser, an incinerator, a tea boiler, a refrigerator, and a boiling water heater. Examples of the valuable part played by gas by-products in the medicinal treatment of diseases were also illustrated.

Road Makers In Conference

ROAD TAR ASSOCIATION MEETS SURVEYORS

THERE was a record attendance of nearly 80 at the University Arms Hotel, Cambridge, on October 17, when at the invitation of the Eastern Region of the British Road Tar Association tar producers and distillers met in conference with surveyors, road engineers, and other representatives of municipalities and county administrations. Similar gatherings have been held annually since 1946, when the initial meeting at Cambridge proved so conspicuously successful that the experiment has been repeated throughout the country, always with most gratifying results.

In proposing the toast of 'The Guests,' Mr. J. Hunter Rioch (General Manager, Cambridge Division, Eastern Gas Board), the Chairman of the Committee, gave a warm welcome to all who in the midst of their busy lives had found time to accept the Association's invitation. It was recalled that since the British Road Tar Association was formed, district tar boards were created as a means of keeping members fully informed of all developments in the production, distillation and use of tar for road surfacing.

The Eastern District Tar Board were pioneers in meeting surveyors and other users of road tars annually to provide them with the latest information regarding new and improved methods. This enterprise proved most fruitful and many had testified to its value. With the nationalisation of the sources from which crude tar was produced, it appeared that the original functions of the district tar boards and their organisation were no longer needed; but it was still considered essential to continue the arrangements whereby tar producers and distillers could meet surveyors, macadam manufacturers, and others concerned with the use of tar, for discussion of mutual problems and the sharing of knowledge and experience.

A Tribute

In referring to the presence of Sir John Stephenson (Chairman of the Eastern Gas Board), Mr. Hunter Rioch paid tribute to his wide and appreciative understanding of the many intricate details connected with the gas industry. In the midst of an arduous tour of the Cambridge division Sir John had seen what was being done by the gas industry to deliver tar of the best quality and while travelling over the East Anglian highways he had been able to appreciate the excellence of the road surfaces. Other guests included Mr. R. C. Newcomen (Divisional Road Engineer for the Eastern Region of the Ministry of Transport) and the surveyors of both the County and City of Cambridge, Mr. F. E. Bayliss and Mr. T. V. Burrows.

With the toast was coupled the name of Mr. C. J. Macdonald (Surveyor to the Norfolk County Council and President of the Institution of Highway Engineers) who replied by expressing thanks for the hospitality which had been extended to the guests in so generous a fashion. Testifying to the value of these meetings, he congratulated the Secretary, Mr. E. H. Winch, on the arrangements made for the meeting.

Mr. Davidson Pratt (Chairman of the British Road Tar Association), after congratulating the eastern district on the enterprise which had been displayed in arranging meetings with surveyors, said that only good could emerge because the Association and the surveyors had a common objective—to see the best roads at the lowest possible cost. The marketing of tar—some 2,500,000 tons each year—was a task upon which the Association was engaged. Of the quantity mentioned as available for disposal, 90% was represented by pitch and creosote, half-a-million tons being used for road making, while a valuable contribution was made to the country's needs in the shape of crude oil. Mr. Davidson Pratt refuted any suggestion that the tar distiller removed anything from the tar which would contribute to the value of road tar. Only the substances which would be harmful to it were separated. He described the object of the Association as being to promulgate the use of tar, and to find new and better methods of spraying roads. Experiments were continually in progress, but these could only be carried out in certain parts of the country.

The ensuing discussion, opened by Mr. Newcomen, was concerned with a number of subjects related to the general theme, which were dealt with by the speaker and by Mr. W. E. Cone, the Association's technical adviser.

The remainder of the afternoon was occupied by a visit to the works of the Cambridge Instrument Company by invitation of the Board of Directors. At the conclusion of an extensive tour, tea was taken in the canteen following which a vote of thanks was proposed by Mr. H. R. Thomas (Engineer and Manager, Bury, St. Edmunds' Group, Eastern Gas Board) and supported by Mr. R. S. Runciman (Divisional Surveyor to the Isle of Ely).

RUTHIN'S NEW GASHOLDER

THE new gasholder of the Ruthin undertaking was inaugurated recently by the Mayor of Ruthin (Councillor R. Bithell Williams) following a luncheon given to the Mayor, Mayoress, members of the Council and other guests at the Castle Hotel. Before the inauguration, Mr. H. Maycock, Engineer and Manager, of the undertaking since 1945, and Engineer and Manager of the Holywell, Ruthin and Flint undertakings, as well as Chairman of the area group, gave figures which showed that since 1934, there had been an increase of 120% in the coal carbonised at Ruthin, an increase of 133% in the quantity of gas made and an increase of 167% in the quantity of gas sold. There had been an increase of 33.1% in the number of consumers, an increase of 101.5% in the average consumption of gas, and the percentage of the 1,100 dwellings in Ruthin which had a gas supply was now 78.

Work on the new gasholder started in June, 1949, and the structural work was finished in May, 1950. It was built by the Oxley Engineering Co., Ltd.

The guests were welcomed to the luncheon, and to an inspection of the Ruthin undertaking by Mr. Maycock, on behalf of the Wales Gas Board. . These facilities had been made possible, he said by the good offices of a well known and highly respected citizen of Ruthin and a member of the Wales Gas Board, Sir William Jones, their host, who was unfortunately indisposed.

Tracing the history of the Ruthin undertaking, Mr. Maycock said that it had been taken over by the British Gas Light Company in 1939, when he had been appointed. Mr. Maycock had not been satisfied with the conditions he found and had taken Mr. S. W. Brown, the works foreman, into his confidence about improvements which could be effected and a higher standard of working which could be attained. He had enjoyed the full co-operation of Mr. Brown and the staff in the bringing of the works to their present level and keeping them there, for which he offered his thanks and appreciation, as without their help this could not have been achieved.

Proposing a toast to the Mayor and Mayoress, Mr. Maycock said that he was glad of the opportunity to express appreciation of his services to the Borough of Ruthin, and of congratulating him on the efficiency of his public work.

Responding, the Mayor regretted that Sir William Jones was unable to be present and asked all to join with him in wishing Sir William a speedy recovery to good health. He thanked the Wales Gas Board on behalf of the Mayoress, the members of the Council and himself. He had accepted the invitation of the Board because he felt it was essential that the Council and the Board should be on the best of friendly terms, and because the Board had such a close connection with Sir William Jones.

Mr. Maycock stressed that in the gas industry they tried to help everybody, and the Wales Gas Board differed from other similar boards in that it had been decentralised as far as possible. For that reason everyone could approach the Board officials and obtain satisfaction. He hoped that the new gasholder would be of great benefit to the community.

IN PARLIAMENT

Robbing Peter To Pay Paul

Transfers from Industry to Restore Dangerous Household Coal Position

IT was not surprising that a statement on the national fuel situation came very early in the life of the new Parliament. On November 8 Mr. GEOFFREY LLOYD, the Minister of Fuel and Power, who has had much experience of fuel matters, painted the overall coal picture in very sombre colours and capped his statement with the announcement of an immediate Order to limit the amount of coal any householder can buy during the next three critical months.

We needed, he said, 19 mill. tons at the very least to take the country through a really severe winter. Against this we had a stock at present of about 16.8 mill. tons, and we were running considerable risks with that figure. The shortfall was concentrated largely in one section—house coal—where stocks were less than half what they should be, lower, in fact, than they have been since the war.

Extreme Measure

Last year's stocks were 15½ mill. tons, but they were better balanced. Even then, at the last moment, the Government had found itself in a critical position and had to resort to the extreme measure of cutting exports by 3 mill. tons and importing coal from the United States. In their extremity in January, the then Prime Minister had made an appeal to the miners, who had made a quite exceptional response and produced an extra 3 mill. tons. In spite of those last-minute measures, most of the Government had been haunted by the fear of what would have happened if the winter had been as severe as, say, in 1947. In spite of everything that had been done, there were considerable shortages of house coal through January, February, and March. Yet that was on the basis of starting the coal winter this time last year on 2 mill. tons. After his experience of the difficulties the former Minister decided that house coal stocks must be raised by November to 2½ mill. tons.

Mr. Lloyd was able to point to one gleam of light, however—namely, that 560,000 tons more coal on order before have been delivered to households during the coal summer. But even this was overshadowed by a shortage of boiler fuel.

> *'It is absolutely clear,' said the Minister, 'that with these dreadfully low house coal stocks, unless something is done at once we shall have a breakdown of supplies after Christmas, if not before if the weather is severe.'*

The Government's initial expedient is, in Mr. Lloyd's words, to rob Peter to pay Paul. They had to take coal from industry to help the home. Luckily, said Mr. Lloyd (though we doubt whether the gas industry will agree wholeheartedly with this), industrial stocks are relatively good. There are risks to industry which his Department will watch very carefully, and he hoped there would be only slight dislocation unless there is severe weather.

One feels, nevertheless, that this small 'sop' to Paul will be tempered by the unsuitable quality of some of the industrial coal he gets from Peter; and due warning is given to Paul by the Minister not to blame the N.C.B. or his merchant for circumstances resulting from the low stock position of household coal. Moreover, there is a definite limit to Peter's capacity to help, and special steps must be taken immediately to conserve our present meagre stocks of household coal. An Order was therefore being made which would limit the coal any householder can buy during the next three months to an amount which would make the total purchases from May 1 to the end of January not more than 24 cwt.

'Stop sniping at our cat!'

'During the last seven days,' said the Minister, 'we have taken all measures which seemed open to us to try to restore the acutely dangerous household coal position. I hope for success, but I can't guarantee it. I am afraid we are very largely in the hands of the weather.'

Referring to the appeal by Mr. Gaitskell the previous day for the nationalisation of the mines to be accepted, Mr. Lloyd thanked him for the assurance that the Opposition would do everything to encourage the production of coal. The Conservative Party had, at the last two General Elections, accepted the nationalisation of coal, which had come to stay. From that followed the fact that 'once you have accepted nationalisation of the coal industry you can't stay around looking at it with neutral or semi-hostile eyes, much less mess around with it. . . . You have got to back it up and do your level best for it.'

Asked by Mr. E. POPPLEWELL (Lab., Newcastle-on-Tyne) if there was any intention to alter the present set-up of the N.C.B. by returning to any district or other regional arrangement, Mr. Lloyd pleaded for a little grace for the reason that he had been but seven days in the Ministry of Fuel and had spent all that time dealing with the critical winter household coal prospects.

Three other Labour Members (Mr. H. GAITSKELL, Mr. T. J. BROWN, and Mr. E. SHINWELL) all pressed for a statement on the Government's policy on this matter; but in spite of Opposition shouts of 'Answer,' the Minister was not to be drawn on the subject.

Enter the ex-Minister

The former Minister of Fuel and Power (Mr. P. J. NOEL-BAKER) entered the arena to reply to Mr. Geoffrey Lloyd's statement, but added little to the sum total of knowledge by observing that he (Mr. Noel-Baker) had frequently expressed his anxiety about house coal. The Ministry, he said, had hoped to increase household supplies this year, but because the household market needed large coal while, through machine mining, the output of large coal had been falling, the percentage had been less than the experts allowed. The Minister could not begin to deal with the long-term problem unless he recognised quite frankly what were the causes of the difficulties. First, there was the immense increase in home demand now going on and, secondly, there was the inherent difficulty of reconstructing the coal industry after its decline from 1913 to 1945. If the Minister wanted to get more miners, and if he wanted the miners' efforts to continue, he must get his supporters to stop suggesting that all our difficulties were due to nationalisation. He offered to strike a 'bargain' with the Government:

> *'Stop sniping at the able and loyal men of all parties who at all levels of the N.C.B. are striving with all their power to serve the nation now,' pleaded Mr. Noel-Baker. 'If you will do that we will not play politics with coal.'*

The ex-Minister exhorted the present Minister to drop the vague and dangerous talk about imposing on the N.C.B. some new organisation from above. There were in the Coal Board the best brains there had ever been in coal. They should be trusted to organise the industry in the way they thought right. The miners were bitterly suspicious of decentralisation.

CONSULTATIVE COUNCILS IN SESSION

Gas Supply for New Housing Estates

Sunderland Division Developments

THE steps which are being taken to provide an adequate supply of gas to new housing estates in the area were referred to by Mr. W. O. Kirkwood (General Manager of the Sunderland Division of the Northern Gas Board) when he presented a progress report to the Sunderland Division Consumer Committee on October 22.

Mr. Kirkwood stated that extensive building schemes nearing completion at the Thorney Close and Pennywell housing estates at Sunderland had imposed a heavy load on the western section of the Sunderland low-pressure system including East Herrington. The Board had completed the laying of two 8-in. diameter high-pressure feeder mains which will augment pressures in the area through suitable regulating equipment sited at the two estates.

At another Sunderland estate, Red House Farm, Southwick, Mr. Kirkwood said that building operations were making rapid progress and they expected to commence in December of this year the laying of a 12-in. low pressure steel main for the improvement of gas supplies to the estate and the immediate locality.

Mr. Kirkwood also mentioned some of the improvement schemes which were being carried out in respect of townships and villages in the Sunderland Division. At New Silksworth a recently laid 8-in. diameter low-pressure main in the area was now effectively augmenting gas pressures and provision had been made to convert the main to high pressure when the position warranted it.

New Gasholder

Increasing local consumption had rendered existing gasholder capacity at Washington totally inadequate, stated Mr. Kirkwood. An improvement scheme had been approved by the Board to erect on a new and more spacious site at Washington, a gasholder of 250,000 cu.ft. capacity to replace the present storage. Subject to final sanction by the Town and Country Planning authority being secured in reasonable time, it was expected that the erection of the holder would start during the summer of 1952.

Negotiations were almost complete to provide more spacious showroom premises near the present centre of population in the Seaham district. Work was well advanced on the laying of an 8-in. interlink main between Stanley and Dipton works at Annfield Plain. The pipeline was being laid and tested with the object of its later inclusion in a projected purified coke oven gas grid from Stella Gill coke works of the National Coal Board. It was hoped that a partial supply to the centre of Annfield Plain would be available at an early date.

Turning to production, Mr. Kirkwood said that the construction at the Ayre's Quay works, Sunderland, of a ¾ mill. cu.ft. per day C.W.G. plant was now reaching completion and at the Hendon works an effort was being made to provide a further six beds of horizontal retorts. With the introduction of this plant, there would be an additional 1¼ mill. cu.ft. of gas per day available for distribution in the Sunderland area during the coming winter. The foundation for a new 2½ mill. cu.ft. gasholder at the Hendon works was completed and the contractors had erected the tank. The completion of this gasholder would provide additional storage at Sunderland in late 1952.

An additional bed of horizontal retorts was now constructed at the Stanley unit and when this plant was at work the production capacity of the unit would be increased by 20%. With the completion of a contract for the installation of new coal handling and carbonisation plant, the production capacity of the Shotley Bridge works would be increased by 30%. The new plant was scheduled for completion in January, 1952.

Councillor Mrs. E. Bell, of Annfield Plain, Chairman of the Committee, presided, and Alderman Hoy, Chairman of the Northern Gas Consultative Council, was also present. The Committee was given a demonstration of a gas-electric washing machine by Mr. B. Verral, Sales Superintendent of the Sunderland Division.

Meter Rents Under Discussion

NO LONGER CAMOUFLAGED IN GAS PRICE

THE Bristol sub-division of the South Western Gas Board issued the following report of the eighth meeting of the Consultative Council Local Committee held in Bristol, when Mr. A. W. Loveys, Chairman of the Consultative Council, occupied the chair in the absence of Mr. L. J. Poole.

A long discussion took place on the revisions that have taken place recently in meter rent charges. Mr. C. R. Ingham (Bristol Sub-Divisional Manager) stated that all protests received by the Board had been answered, and in most cases satisfaction given to the correspondents. It was mentioned that the Consultative Council had themselves advised the Board that the only fair thing was to charge the same rental for meters throughout the area, and that the cost of meters should be recovered in the rental and not camouflaged in the price of gas.

It was stated that on the old rental basis the income from meters did not balance the cost of their purchase price with interest and depreciation charges. The Board were losing money on meters; that was to say, the cost was being camouflaged in the price of gas, which was the thing the Consultative Committee had said was wrong. The cost of meters should be borne by the individual consumer.

The Chairman stated that the public had not fully appreciated that formerly there were large discrepancies between the meter rentals charged. If they had, there would be less dissatisfaction over the new rates. It was decided unanimously that the charges, bearing in mind the whole of the facts, were equitable. A copy of the Gas Examiner's report for the quarter ended June, 1951, was submitted, which showed that the statutory requirements had been complied with satisfactorily. The average C.V. for the quarter was 461 B.T.U.

Germs and Therms

Slowly we are coming to recognise that germs and microbes are a menace to good health, and doctors and local medical officers of health are campaigning to emphasise that fact to the public. The Clean Food Exhibition held at Uttoxeter Town Hall from October 9 to 13, stressed the importance of cleanliness in all dealings with food—in the inspection, buying, reparation, etc.—and the West Midlands Gas Board exhibit showed how gas helps the project.

The stand was small but told its tale aptly. Hot water and refrigeration were the main features. In addition, gas fires made a case for clean, smokeless heat and gas cookers showed that the after-meal cleaning of cooking apparatus is simplicity itself with the removable hotplates, pan stands and smooth enamel sides. As a result of the exhibition many useful contacts were made.

It is Expected that within 18 months the 25 new coke ovens provided for in the £330,000 scheme for improvements at the Beighton Brookhouse Colliery will be in operation, and then the present 25 ovens will be modernised and renovated. At present this plant is providing 2,500,000 cu.ft. of gas daily to the East Midlands gas grid.

Wales Group Chairmen and Conveners

Sixth Meeting at Aberystwyth

FOLLOWING its usual practice the Wales Gas Board held its sixth half-yearly conference of Chairmen and Conveners of Group Committees at Aberystwyth from October 19 to 21. The Chairman, Deputy Chairman, and other members of the Board, together with chief officers from headquarters, were present. For the first time, the chairman of another area board accepted an invitation to attend the Conference. The usual procedure was followed. Papers that had been circulated well before the Conference were examined and discussed in detail. To obtain the views of managers and other officials of undertakings, the papers included one by a group chairman and another by a group convener. They were both asked to express quite freely their opinion on and criticise, if they so wished, the administration of the Board as they saw the organisation from their position as group and undertaking officials.

Mr. S. L. WRIGHT, Gas Engineer, referring to the 'need for economy,' said it would be the increased duty of managers during the coming winter to preach fuel economy to gas consumers in view of the difficult coal situation and there was an equal need of constant review of their own use of fuel. To this end figures relating to the use of gas, electricity, and solid fuel at each undertaking for power and other purposes had been shown on the quarterly summary in total and in relation to each 100 therms of gas sent out as an indication where savings might be effected.

The principle of making greater use of exhaust steam at the Board's medium and larger undertakings was considered to offer possibilities of a real contribution to fuel economy and all manufacturing undertakings within that category were urged to review their present practice and examine the practicability of using or extending the use of exhaust steam for process work and to replace high pressure steam.

Early reports as to the possible application of this principle were required from managers in charge of undertakings using considerable quantities of solid fuel for steam raising in order to secure the fullest possible benefit during the coming winter.

Rewards for Ideas

Mr. Wright recalled that in his paper on administration, presented to the conference in April, 1950, the Secretary stated that the Board had decided to offer cash prizes to any of its employees in whatever capacity who submitted an original idea or suggestion for the betterment of the general working of the industry which, in the opinion of the Board, was worthy of reward. It was, he said, the Board's desire that members of staff and employees should be encouraged to put forward their ideas for improvements and it might be of interest to others to know that rewards had already been made to a bricklayer of the Neath undertaking for devising a method of repairing cracks in a gasholder dumpling subjected to internal water pressure, and to a works foreman of the Prestatyn undertaking for devising automatic loading and unloading arrangements for a relay type retort house governor.

Mr. W. T. H. Hird, Distribution Engineer, emphasising the importance of dealing with unaccounted-for gas, said the accuracy of registration of meters was fundamental in maintaining a low unaccounted-for gas figure. To ensure continuing accuracy *in-situ* testing of meters was essential. Several groups had already submitted schemes for *in-situ* testing and these had been approved and were in operation. All groups should institute such schemes as soon as possible and should submit recommendations for schemes suitable for their groups in the near future.

To guide group committees in their considerations, the following principles were suggested:—

(1) Each domestic meter should normally be tested not more frequently than every five years or less frequently than every ten years; (2) where not previously tested all meters should be tested as soon as possible and thereafter at the intervals indicated in (1); (3) all meters found to be outside the statutory limits to be changed. This applies to both 'fast' and 'slow' meters. Where labour and materials are scarce the most inaccurate meters should be changed first; (4) *in-situ* testing is best carried out by test meters, but the use of suitable test burners will be considered; (5) it is important to arrange for main-taps to be examined and this can be done at the same time as the meter test; (6) industrial meters should be tested annually. The Board intends to acquire test meters suitable for the testing of station meters and it is hoped that these may be available to groups for testing of industrial meters. Until these are available and where undertakings and groups' resources are insufficient, arrangements for tests can be made with the makers of the meters.

Gas in New Houses

More local authorities have accepted the Board's standard terms for the installation of gas in new houses. During the year ending March 31, 1951, schemes for the installation of gas in 12,860 new houses were authorised by the Board. With the figure of 5,872 houses for the previous year, the Board has since vesting day authorised schemes covering 18,732 houses. It will be appreciated, said Mr. Hird, that the actual building of these houses will not be completed in the year of authorisation, but will in some cases cover several years of building. An interesting comparison can, however, be made with the figures for houses authorised by the Welsh Board of Health for the calendar years 1949 and 1950 and the houses completed in those years. The figures are:—

	1949	1950	Total
Authorised	12,429	9,272	21,701
Completed	9,498	8,735	18,233

After allowing for those houses being built in areas where no gas supply is at present available, almost the whole of the houses now being built are being equipped for the use of gas.

Progress with schemes for existing houses is slow and undertakings should prepare schemes as soon as possible. The difficulties which arise from the shortage of materials is realised, but the sooner schemes are prepared and authorised, and orders placed, the sooner will the completion of the schemes become possible. Particular attention should be given to those cases where houses are serviced and not using gas, and to those houses on the line of mains which are not connected. Additional consumption can be obtained in these cases for a minimum use of capital and materials.

Welfare

Mr. W. E. Crowley, Industrial Relations Officer, reported that the Board had recently decided, in view of the duty laid on it by Section 57 of the Gas Act, 1948, with respect to the promotion and encouragement of measures affecting the welfare of persons employed by them, to give certain financial assistance when application is made by clubs formed by employees on their own initiative for social, recreational and cultural activities and when such applications are approved by the Board. Where premises of the Board are or can be made available, the club may be permitted to occupy such property on payment of a nominal rent. To enable the club to equip the premises and/or purchase other equipment, a grant equivalent to 50% of the approved cost of agreed equipment may be made. The Board is prepared to make a loan to the value of the remaining 50% of the approved cost of agreed equipment, repayable over a period of five years with interest at 2½%.

Mr. Crowley said the Wales Gas Board was not represented this year in the gas industry national first-aid competition owing to the lack of qualified first-aid men in the area. From information submitted by undertakings, it was found that there is a dearth of qualified first-aid persons in the Board's employ. It is hoped that by next year it will be possible to form a team to represent the area and for this purpose every employee interested in first-aid is to be encouraged to become a qualified first-aid man.

Publicity

Mr. C. B. Mawer, Secretary of the Board, dealing with administration, said the Board has decided that a more efficient service can be given to undertakings if all activities relating to pub-

licity were to be co-ordinated by the creation of a publicity advisory panel at headquarters. The panel has not been formed with the object of using it to issue directives to managers of undertakings; each manager is personally responsible for the activities of his own undertaking. Its principal functions are to keep undertakings informed of the latest developments in the field of publicity (this information is usually received at headquarters and not by undertakings), to provide a central store at Bute Terrace, Cardiff, from which undertakings may hire materials which it would not be economic for them to purchase outright and to provide other services made possible by an organisation of the size of the Wales Gas Board. The success or failure of this panel is largely dependent on the degree of support and co-operation received from all undertakings.

The Board's architect has offered comments on showrooms, including the suggestion that whenever possible the 'dressed' window should be avoided; the public should be given an opportunity of viewing the whole showroom as a display. In the case of many small showrooms, the front usually consists of a display window and door. If the window is used for a fixed display (without appliances), passers-by are obliged to peer through the door to see the appliances in the showroom itself. When small items, such as gas pokers, mantles, etc., are displayed, they should not be laid indiscriminately on the floor of the window near the glass but should be made the subject of an individual display on a small table or built-up structure.

Legal Matters

Mr. T. O. Jones and Mr. T. H. Griffiths, the Board's Solicitors, gave advice regarding the Rivers (Prevention of Pollution) Act, 1951. The provisions of the Act come into force (with certain exceptions) on October 1, 1951. It is of major interest to all managers, not least because they are personally liable for breaches of its requirements. The responsibility for enforcing the Act is placed on the river boards. The Act makes it an offence for any person to (a) cause or knowingly permit to enter a stream any poisonous noxious or polluting matter; and (b) cause or knowingly permit to enter a stream any matter so as to tend either directly or in combination with similar acts (not necessarily his own or anothers') to impede the proper flow of the water of the stream in a manner leading or likely to lead to a substantial aggravation of pollution due to other causes or of its own consequences. 'Poisonous noxious or polluting matter' is not defined. The river boards have power, however, to make by-laws laying down standards.

Sales Development at Port Talbot

DESCRIBING 'Sales Development at Port Talbot,' Mr. W. F. Edwards, General Manager and Secretary of the Port Talbot undertaking, admitted that his was not only a gas-minded town, but a boom town with a considerable housing scheme. His paper set out to analyse the factors underlying the successful development of sales and service in the district.

Mr. Edwards placed first the importance of maintaining the closest contact with consumers at all levels, keeping a watchful eye on possible future business. In his showrooms he welcomed 'remote' displays which would draw the public, lending one window and retaining the other for strong gas propaganda. The author strongly defended the hire purchase terms offered—including a ten-year payment on storage water heaters. Home Service was actively pursued, and their scope had been widened by the use of mobile showrooms. All sales staff were offered, and had accepted, educational facilities.

Maintenance canvassers were employed, each man having his own district. They were responsible for general maintenance (thus releasing fitters for other work), canvassing, district complaints, erecting and manning demonstrations, and keeping maintenance and canvass records. An optimum number of five maintenance canvassers would undertake 8-10 calls per day, an optimum division of 2,272 consumers covered per annum. The author estimated the cost per call at 3s. 8.2d., and 0.245d. per therm; but allowing for such 'credits' as the inclusion in hire purchase price of 2½% for maintenance, and assuming 1% of this for labour, plus services saved of one skilled fitter engaged on maintenance, he arrived at a figure of 2s. 8.2d. per call, or 0.179d. per therm. The profit on the sale of appliances secured and inspired by these men was not assessed.

The Port Talbot Corporation had recently completed the 1,000th new house since the end of the war. In these heating and cooking points numbered 4,717, lighting points 3,879; electricity supply was not available for 400 of these houses. Appliances installed totalled 2,853.

The author also instanced experience in Bryn, a village which was all-electric. After canvassing, holding an exhibition for a month, and arranging for a deferred payment system for the cost of installation, 130 appliances had been installed, and 70 were on order—all from a possible total of 246 consumers. Local canteens, chapels, and a hostelry had also had gas installed.

Referring to the question of tariffs, the author pointed out that it was a great advantage to a gas salesman to be able to say to a consumer, when selling additional appliances: 'You will use more gas, but you will pay less for the extra gas.' This was what he termed the 'more gas reduction' principle; but in applying this principle it could happen that additional plant had to be put down at current abnormal cost to meet the demands of the 'more.' Before tariffs could be framed, a plentiful supply of good quality gas must be available for the foreseeable future.

Mr. Edwards explained that the sales superintendent directed the maintenance men to selected streets each day, and on the following morning they had to enter up their particular cards. From these a weekly summary was prepared and, finally, a monthly record. Each man kept a book in which he recorded work that required the attention of a fitter or home service adviser, and the items were extracted for their particular departments.

The paper concluded with a definition of the three outlooks essential in sales development: The Welsh word 'hwyl,' meaning fervour or zeal, humour, and hope. Hywl without humour, he said, could become fanaticism, and humour without hwyl became romanticism.

Progress with Major Schemes

Reporting on progress of major schemes, Mr. W. R. Branson, Planning Engineer, stated that with regard to the South Wales Eastern Gas Grid, supplies of coke oven gas became available from Nantgarw on September 14, and approximately 2 mill. cu.ft. per day is at present being distributed to the Rhymney and Aber, Blackwood and District, Risca and Abercarn undertakings. Completion of the connection to the Cardiff undertaking was due during the week commencing October 15, when the quantity of coke oven gas taken was expected to be increased to approximately 3 to 4 mill. cu.ft./day. Mainlaying progress was as follows:—

	Miles
Prior to vesting day	41.4
May 1, 1949, to March 31, 1950	3.3
April 1, 1950 to September 30, 1951	43.3
	88.0
Remaining to be completed:	
First section (approximately) ...	9.0
Complete scheme (approximately)	76.0

Regarding the South Wales Western Gas Grid site preparation at Aberavon Works, Port Talbot, was almost complete. Considerable difficulties had been experienced in obtaining supplies of steel for the reinforced concrete purifiers, but work on these was now expected to commence during the current month.

Orders had been placed for most of the plant required and it was hoped that, with the exception of the compressing plant, delivery of which was very protracted, the remainder would be in operation early in 1953. Mainlaying to connect the Morriston works, Swansea, to the grid was in hand, and it was hoped to be complete by the end of the year. Mainlaying progress was as follows:—

	Miles
Prior to vesting day	22.2
May 1, 1949, to March 31, 1950	7.9
April 1, 1950, to March 31, 1951	8.5
April 1 to September 30, 1951	4.7
	43.3
Authorised and remaining to be laid	18.3
Total	61.6

Good progress with the new Maelor works, Wrexham, and Maelor Alun Grid, was being made by the principal contractors and it was hoped that the plant would be in operation by the Autumn of 1952. Mainlaying to Rhos and Cefn Mawr had been completed and a start made on the mains between Connah's Quay, Buckley, and Mold.

The first butane/air plant was ex-

pected to be brought into operation at Whitland this month. Two types of mixing plant were being installed to enable a comparison to be made between the different systems. One would consist of a 'Mallet' (French) plant employing Connersville type blowers to pump the vapour from the cylinders and the air required through a mixing unit into the gasholders. The second mixing plant was of American design in which liquid from the containers was heated and the pressure of the resultant vapour employed to inject the necessary air.

It was hoped that by early in the new year some indication would be obtained of the cost of operation and the relative merits of the two systems.

Coal Testing

Mr. W. Clark Jackson, Coal Officer, announced that since the last conference valuable information had been obtained as a result of coal tests carried out at the Grangetown test plant in respect of quality and price of the gas coals used by Wales Gas Board undertakings, and it was now possible to build up a record of the week by week quality standards of these coals. It was understood that further quality/price evaluation would shortly be put forward by the National Coal Board. The Board's test records would be of considerable service as and when any new figures were under review. The tests were also serving as a 'yard stick' by which actual everyday carbonising results could be compared, and furthermore they had been of great service as supporting evidence where the withdrawal of certain inferior coals from the gas coal supply programme had been dealt with.

Coal deliveries during the summer had without exception been very much below anticipation and had it not been for the fact that they finished their winter programme with a stock in hand of over 42,000 tons, representing approximately 3.7 winter weeks' consumption, and for the fact that increased supplies of bulk gas were made available to several of the larger South Wales undertakings during the summer, with a consequent reduction in actual tonnage of gas coal required, the Board would have been in a sorry plight today.

The position on September 20 showed a tonnage of coal in stock of 42,545 tons, equal to approximately 3.9 winter weeks' consumption, and a very small increase over the stock held at the beginning of the programmed period. While the position of the South Wales undertakings was reasonably satisfactory, this (also at September 20) was not the case in respect of the north and Mid-Wales works, deliveries from the North Eastern and North Western Divisions of the National Coal Board having fallen very much short of actual programmed tonnage deliveries.

During the Summer peak load gas consumption period in North Wales undertakings, it was only by carrying out quite a considerable amount of 'switching' that it was possible to maintain a reasonably safe minimum stock at several undertakings.

Mr. Clark Jackson recalled that at the conference 12 months ago he referred to the necessity of ensuring the checking of coal stocks at regular intervals, preferably each month, but in any case at least once each three months, and urged that managers of the Board's gas producing undertakings should give their personal attention to this important matter.

A number of cases had arisen, within the past few months, of undertakings holding a far less tonnage of coal in stock than was being actually returned. This was a very serious matter, particularly as the programmed weekly tonnage allocation for each programme period took into account the tonnage of coal in stock as given by the undertakings. If, therefore, any undertakings returned a larger coal tonnage than was actually in stock, it meant that the tonnage for the next programme period would suffer by that particular amount.

Tariffs

Mr. Trevor A. Morgan, Chief Accountant, reviewed a wide range of subjects relating to accounts at Board and undertaking level. Referring to tariffs, he said that while it was known that group committees in many cases were making progress towards the formulation of tariff recommendations, and towards agreed proposals on meter rentals and prepayment differentials, no further completed group proposals had been received at headquarters since the last conference. Representations concerning the price of gas which were constantly received by undertakings and by headquarters underlined the desirability of producing suitable tariffs, particularly in those cases where nothing beyond a flat rate price or an inadequate step scale of charges existed at present.

It was always simpler to introduce promotional tariffs when prices generally showed a downward tendency. Nevertheless, it was possible to produce such tariffs at any time of general price changes by loading more heavily unremunerative consumptions with corresponding benefit for the satisfactory loads. Moreover, while the introduction of suitable tariff forms under present conditions might give either no, or only very restricted, immediate advantage to consumers, their existence could have a twofold value. Firstly, they would enable extension of use by existing consumers to be made at decreasing effective cost per therm and, secondly, they would enable both the consumer and the Board immediately to make the most effective use of any future reduction in price, if this should become possible.

Shop Stewards' Production Plan

(From the October issue of TARGET)

IT was from a plan put forward by three shop stewards that workers in the meter tin shop of George Wilson Gas Meters, Ltd., Coventry, were able to increase their productivity by 20%.

Management had made clear that the only way to increase earnings, particularly for lower paid workers, was by raising the productivity level of the shop. With working methods which went back almost fifty years, increased productivity could only result from new production methods, and this called for some form of re-deployment of labour.

The shop stewards discussed their plan with the workers, members of the Sheet Metal Workers' Union, who agreed to play their part in reviewing existing methods.

The manufacture of a meter was a one-man job, with no sharing out of the work.

The worker drew twelve sets of meter parts.

1. He soldered two grids in each of twelve valve plates.
2. Soldered on twelve 'trouser' pieces.
3. Soldered in twelve divisions.

The operations have been listed in the simplest manner, but they were by no means the whole of the work carried out. In addition, soldering irons had to be prepared for each operation, and jigs changed.

Instead of one man doing the whole job, the shop stewards' proposal was to share out the work among a three-man team. In putting their plan before the management they asked for two modifications of organisation—that two meter sub-assemblies should be made by labour outside the team. This was agreed and the new method was given a month's trial.

It was an immediate success. Production went up by 20%, and has been maintained at that level ever since. Earnings of lower paid workers rose by 30%, while increases for top rate workers were around 5%.

The top rate men had, in fact, put some of their skill into the pool to the advantage of the lower paid workers.

Subsidiary advantages from the working of the team system are savings in transport and in handling; saving in stores labour, since parts are now issued in larger quantities and requisitions are consequently less frequent.

The happy relations existing between management and labour is due in no small measure to the frank, personal message which the managing director sends out each month, giving facts, good or bad, concerning the company. These messages have helped to create a co-operative spirit between all classes of workers and management—a necessary preliminary to the introduction of the new working arrangement.

The team method has been recommended for adoption in the company's other works in London, Manchester, Blackpool and Wolverhampton.

Newton Chambers & Co., Ltd., of Sheffield, have been granted a building licence for extensions to its Warren Lane factory and welding bay costing £85,000.

Tray Purifiers—*a New Type of Oxide Purification Plant*

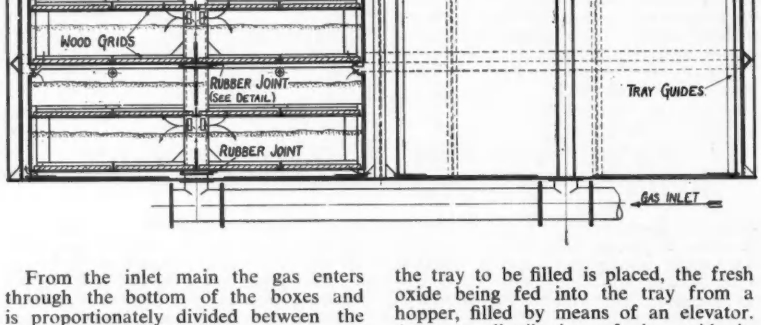
THE following is a description of a new form of oxide purification plant now being manufactured and installed by R. & J. Dempster, Ltd., under licence from the patentees (Carr and Litler, Patent No. 628,338) who were responsible for the erection of the pioneer installation at the York works of the North Eastern Gas Board.

The tray type of purification plant comprises a line of purifier boxes of normal construction, housing a number of trays each fitted with central gasways and two tiers of oxide-carrying grids and supports, gastight joints being provided between the gasway sections. Means are provided to facilitate the self-location of the trays during the changing of the boxes. The accompanying line diagram shows a sectional view of a typical tray purifier box.

In a fully mechanised installation the trays of fouled oxide are tipped, by means of the crane, into a breaker, whence the oxide is carried by elevator and deposited where desired. Means are available for loosening the caked oxide, to facilitate the tipping of it from the tray.

The refilling of the trays in a mechanised installation involves the use of a slowly reciprocating table upon which the tray to be filled is placed, the fresh oxide being fed into the tray from a hopper, filled by means of an elevator. An even distribution of the oxide in the tray being filled is ensured by the reciprocating motion of the table.

Tray purifiers may be built of cast iron, steel, or other material, and can be emptied and recharged in a working day or less with two, three, or four men, depending upon the size of the plant. They need fewer men to be employed regularly on purification, with no peak demand on the available labour force, and lead to more efficient working, due to more even charging with oxide. They also allow a greater capacity per unit volume of oxide, due to lower linear gas velocity. Moreover, they eliminate trouble from cracked or corroded plates, as the oxide is in trays or containers, and not in direct contact with the sides of the box. The total back pressure thrown is relatively low, since each unit volume of gas only passes through 1 ft. 6 in. depth of oxide per box, and the system maintains a more even temperature of the purification material, due to the insulating effect of the annular gas space surrounding the trays, and it is also claimed that it eliminates most of labour's objections to the work entailed in dry box purification.



Line diagram showing section through a typical tray purifier box

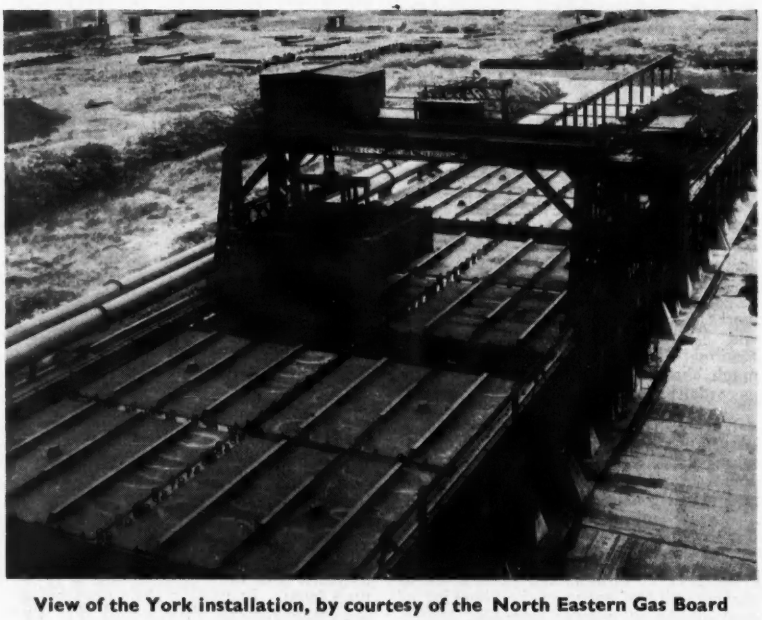
From the inlet main the gas enters through the bottom of the boxes and is proportionately divided between the number of stacks of trays, passing up the central gasway and out through ports arranged therein to allow the gas to pass upwards and downwards through the tiers of oxide, and thence to the space between the trays and the outer casing. From this space the gas is collected and passed to the outlet main, or to the inlet of the following box.

Over the top of each stack of trays a steel cover of normal type is provided, the various covers and trays being handled and transported by means of an overhead travelling crane. The trays are emptied and refilled in a space provided at the end of the line of boxes.

Easy Access

To facilitate easy access to the covers the boxes are fitted with balconies, handrailing, and stands, and may be provided with drains, air valves, steaming points, and instruments as desired. Gas connections may be arranged for reverse flow if required.

When changing a box the cover is removed and the trays of foul oxide are lifted out and transported to the space at the end of the boxes. Spare trays which have previously been filled with fresh oxide are here lifted up and transported to the box being changed, placed in the box, and the cover replaced. The fouled trays may, of course, be emptied and refilled at any convenient time.



View of the York installation, by courtesy of the North Eastern Gas Board

AVAILABLE IRON IN PART-SPENT OXIDE*

By P. F. F. CLEPHANE, M.Sc.,
North Thames Gas Board

THE principal cause of loss of available iron is the dehydration of iron oxide. Therefore, high temperatures and dry atmosphere should be avoided. The most frequent cause of high temperature is storage in heaps before revival is complete. Heaps should be knocked down and spread as soon as possible after discharge. To complete revival adequate water must be present and the water content of all part-spent charges intended for re-use should be adjusted to between 15% and 25% on the sulphur free basis. Water in excess of this should be avoided, since, while it does not hinder the reproduction of available iron, it prevents subsequent access of gas. With overhead purifiers the ideal procedure is to start disintegration as soon as discharge is complete. In this case the best method to apply any needed water is in a very fine spray to the material at the outflow from the disintegrator. Oxide treated in this way may be safely stored in heaps up to 4 ft. deep. If this is not practicable it is essential that heaps should be reduced to not more than 2 ft. in depth within 24 hours of discharge and sprayed with water if necessary. The oxide will then come to no harm and can be put through the disintegrator at leisure. When discharged from ground boxes, oxide should never be built into heaps more than 2 ft. in depth until it has been disintegrated and adequately watered.

The removal of light oils from the gas stream and the admission of purification air, coupled with a little live steam, to the second taker appears to improve revival *in situ* and to reduce the tendency to caking.

The basic material on which these investigations were made was Dutch bog ore with an organic fibre content averaging 29% of dry sulphur free material. The range was from 19% to 35%. It is probable that material with more organic fibre or with fibre of a more porous nature in its composition would tolerate higher percentages of water. A prepared charge is definitely too wet if, when a handful is squeezed together, any visible moisture exudes upon the surface. The 'ball' resulting from such a test should crumble as soon as it is disturbed.

Fundamental Requirement

The fundamental requirement for satisfactory results from a purifier set is an adequate supply of iron oxide in a form capable of reaction with hydrogen sulphide and of subsequent re-oxidation, by the oxygen in the gas stream, to its original condition. Oxide of this type is what is meant by 'available iron.' This paper deals primarily with the proportion of available iron present in part-spent charges. It is agreed that many other factors influence the purification process, but unless the fundamental condition is achieved, the utmost care in other directions does not help. Several modifications of iron oxide have the desired properties, but available iron is expressed throughout in terms of the Fe_2O_3 which, when hydrated, would react with the same amount of hydrogen sulphide as do the active constituents of the material under consideration. The test procedure is detailed in the appendix. Briefly it consists of determining the weight of hydrogen sulphide that is absorbed by 5 grammes of oxide after it has been crushed to pass a 30 mesh B.S. sieve. In order that they may be comparable, all percentages of available iron mentioned in the text are corrected to the basis of dry material, free from sulphur, unless otherwise specified.

The proportions of available iron present in several parcels of part-spent oxide were determined and found to vary greatly. To ensure that all samples were fully revived, portions of each were crushed to pass a 30 mesh B.S. sieve, brought to a water content of about 20%, and left in thin layers exposed to the atmosphere for several days, during which time they were stirred occasionally. Evaporation losses were made good daily by the addition of water. On the second day and each day following, portions were withdrawn and the available iron was determined. In most cases increases were observed up to the end of three days, when the maximum value had been reached. Results are shown in Table I.

TABLE I.

As sampled

No. of Sample	H_2O	% Sulphur		% Av.: Fe_2O_3	
		W.B.	D.B.	W.B.	S_2 free D.B.
1	20·9	23·8	30·2	12·1	21·9
2	12·6	36·4	41·6	13·2	25·9
3	23·1	25·4	33·0	12·6	24·4
4	15·0	40·0	47.0	7·0	15·5
5	12·6	36·4	41·6	13·2	25·9
6	20·3	26·4	32·2	15·7	25·6
7	11·0	41·4	46·5	13·0	26·7

Fully Revived

No. of Sample	H_2O	% Sulphur		% Av.: Fe_2O_3	
		W.B.	D.B.	W.B.	S_2 free D.B.
1	15 0	27·4	31·6	15·0	26·1
2	16·6	35·8	42·9	14·6	30·6
3	26·2	24·0	32 7	14 1	28 5
4	16·0	39·6	47·1	9·9	22·3
5	12·2	36·8	41·9	14·8	29·0
6	23·4	24·6	32·2	16·5	31·7
7	13·7	40·0	46·4	15·2	32·9

No. of Sample	Increase in % of Sulphur		
	Actual	If Av.: Fe_2O_3 were from Fe_2O_3	Difference
1	1·4	1·5	−0·1
2	1·3	1·4	−0·1
3	−0·3	1·4	−1·7
4	0·1	2·1	−2·0
5	0·3	0·9	−0·6
6	0·0	2·1	−2·1
7	−0·1	1·5	−1·6

It is clear from the percentages of sulphur found in the original and fully revived samples that in only two cases can the increase in available iron be attributed mainly to delayed re-oxidation if iron sulphides.

Attempts were made to determine the sulphide present in the number of samples. Five grammes of the prepared sample was weighed into an Erlenmeyer flask carrying a tap funnel, fitted with a side arm and a delivery tube. The latter was connected to two wash bottles charged with cadmium acetate solution; 75 ml. of distilled water was introduced into the flask and the air swept out by a stream of nitrogen; 25 ml. of 25% sulphuric acid solution was then added and a slow flow of nitrogen maintained while the solution was gently boiled for half-an-hour. Five different samples yielded no precipitate of cadmium sulphide.

A lead acetate paper disc test was substituted for the absorption train and the tests were repeated. In only one case was a measurable stain, equivalent to 0.00001 grammes of H_2S, obtained.

Ferrous iron was always found in solution as an end product and the possibility of hydrogen sulphide liberated having reacted with ferric salts cannot be ignored, but it is improbable that such reaction would have 100% efficiency. Moreover, R. H. J. Hammett, of the Fulham Research Laboratories, after carrying out solvent extraction of sulphur and water soluble sulphur compounds from several samples of part-spent oxide, has been unable to detect appreciable quantities of sulphide in his solid residues. It therefore seems that delayed re-oxidation of iron sulphides can be discounted as a major factor in the increases of available iron observed.

* Paper to the London and Southern Junior Gas Association, November 2, 1951.

Consideration suggested that the increases might be due to the oxidation of ferrous oxide to the ferric state, thereby increasing its available iron equivalent by 50%. Alternatively a complex iron ammonium carbonate might be breaking down under the influence of air and water. A further series of tests was carried out to determine, in addition to water, sulphur, and available iron, the ferrous iron and carbon dioxide content of samples before and after laboratory revival treatment. For the ferrous iron and carbon dioxide estimation the same apparatus was used as in the earlier attempts to determine sulphides, substituting barium hydroxide solution as the washing agent. The results are shown in Table II.

TABLE II.

No. of Sample	As Sampled						
				% Sulphur		% Av.: Fe_2O_3	
	% H_2O	% FeO D.B.	% CO_2 D.B.	W.B.	D.B.	W.B.	S_2 free D.B.
8	10·4	9·7	1·2	38·0	42·4	10·5	20·4
9	12·9	7·9	0·8	40·6	46·5	12·9	27·8
10	12·2	8·6	0·7	41·6	47·3	9·2	20·0

No. of Sample	Fully Revived						
				% Sulphur		% Av.: Fe_2O_3	
	% H_2O	% FeO D.B.	% CO_2 D.B.	W.B.	D.B.	W.B.	S_2 free D.B.
8	22·9	9·1	1·0	33·2	43·2	13·1	29·9
9	14·6	6·4	0·6	39·4	46·2	18·4	40·1
10	15·1	8·3	0·7	40·6	47·8	12·6	28·5

No. of Sample	Increase in % of Sulphur		
	Actual	If Av.: Fe_2O_3 were from Fe_2S_3	Difference
8	0·8	2·8	−2·0
9	−0·3	3·0	−3·3
10	0·5	2·9	−2·4

Since there is no substantial difference between the proportions of ferrous iron or carbonate found in samples before and after treatment, these hypotheses fail and we are driven to the view that the increase found in available iron must be due to the rehydration of iron oxide already present but rendered inoperative by dehydration in service. It was observed about this time that magnetic oxide of iron was present in one sample, following which many other samples from various sources were all found to contain magnetic oxide. One such sample was divided into two parts, in one of which ferrous iron was determined in the usual way. From the other, magnetic material was separated as completely as possible, and the ferrous iron in the magnetic portion only was determined. The results showed FeO in the original to be 5.3% while the FeO in the magnetic portion, calculated as a percentage of the original material, was only 0.7%. The magnetic oxide is evidently not the principal source of ferrous iron.

Field Work

To restore maximum available iron to the bulk of the part-spent oxide, each heap was spread in a layer about 12 in. deep (no greater area was available), sprayed with water, and left two days. It was then well stirred by a mechanical pusher and resprayed with more water, the process being repeated until the available iron in a field sample approached the maximum attained by treatment in the laboratory. In most cases two field treatments sufficed.

The problem now was to prevent future dehydration in service. A number of factors can contribute to this particular failing. The most important were thought to be:—

(1) Spontaneous heating after discharge from boxes if the material were left in large heaps for any appreciable period.

(2) Undue temperature rise while in first taker position.

(3) The presence of an oil film interfering with rehydration of iron oxides produced *in situ* by the re-oxidation of iron sulphides, since it was known that our part-spent oxide contained light oils to the order of 1% by weight.

The available iron was determined in a sample of the new bog ore from which most of the part-spent charges had been derived. The method used was modified slightly, since it was realised that new bog ore contains substances capable of absorbing hydrogen sulphide but not of subsequent re-oxidation to their original state. Instead of calculating the available iron from the increase in weight of the sulphided sample, this was revived in air by spreading in a thin layer and keeping moist for three days. The sulphur recovered was then determined and used as a basis for calculating the available iron, which proved to be 34.0%.

A particular box discharged was found to have an available iron content of 20.4% immediately on discharge. Within 18 hours a start was made on passing the material through the disintegrator. As it emerged it was subjected to a fine spray of water in sufficient volume to bring the water content to approximately 20% and then piled in heaps about 4 ft. deep ready for charging into the next vessel. The process took two days and samples taken from the heaps immediately on completion gave an available iron of 27.1%. The original sample was treated in the laboratory and was eventually restored to an available iron content of 29.9%. One month later, before reuse, the heaps were again sampled, when the available iron was found to have reached 30.1%.

The differences in treatment between this and the field parcels referred to in Table I were:—

(1) A water spray was used after the disintegrator in this case.

(2) The field parcels may have remained in heaps for three to six days before being passed through the disintegrator.

The inference is that while partial dehydration occurs in the boxes, full restoration can be readily achieved by prompt treatment on the ground. The serious permanent loss of available iron experienced in some cases—*e.g.*, No. 4. Table I—must be attributed to overheating in heaps after discharge, when temperatures may rise to well over 100°C. without any visible evidence of actual combustion. The highest temperatures we have recorded in our oxide beds in use is 139°F.

Oil Scrubbers

Attempts were made to reduce the probable causes of dehydration in the gas stream. An oil tower scrubber was introduced at the inlet to purifiers to remove the bulk of the condensible oils from the gas. This consists of a tower 30 ft. high by 7 ft. 6 in. in diameter. The top 6 ft. contains a trough oil distribution system, below which are 30 tiers of hardwood boards each 6 in. wide by ½ in. thick set edgewise with ½ in. spacing. Each tier is arranged at right-angles to the tier below. The bottom section of the tower acts as an oil sump from which oil is circulated at 2,000 gal. per hour. Debenzolised oil is added to the distribution system at the rate of 1 gal. per 1,000 cu.ft. of gas washed, a corresponding volume of circulating oil being withdrawn by overflow from the sump and debenzolised in the benzole plant before being returned to the system for recirculation. The tower deals with up to 240,000 cu.ft. of gas per hour and reduces condensible oil from approximately 2.5 gal. per 100,000 cu.ft. to 0.35 gal. per 100,000 cu.ft. It has been in continuous operation for over a year and has caused no trouble so far. The oil in our part-spent oxide has fallen to about 0.2% by weight.

The point of air admission for revival *in situ* was changed from inlet first taker to inlet second taker in order to spread the temperature rise due to the reactions involved and so reduce the maximum temperature likely to occur in the oxide beds. At the same time live steam was admitted to the inlet second taker through an independent controlled service, at a rate of approximately 60 lb. per 100,000 cu.ft. of gas, to prevent the oxide from drying out. This figure was based on experimental determination of water balance and is valid for this particular stream only since it is a function of the heat losses by radiation and convection from the set.

These measures have not been in operation long enough yet for a firm opinion to be expressed on their efficiency, but

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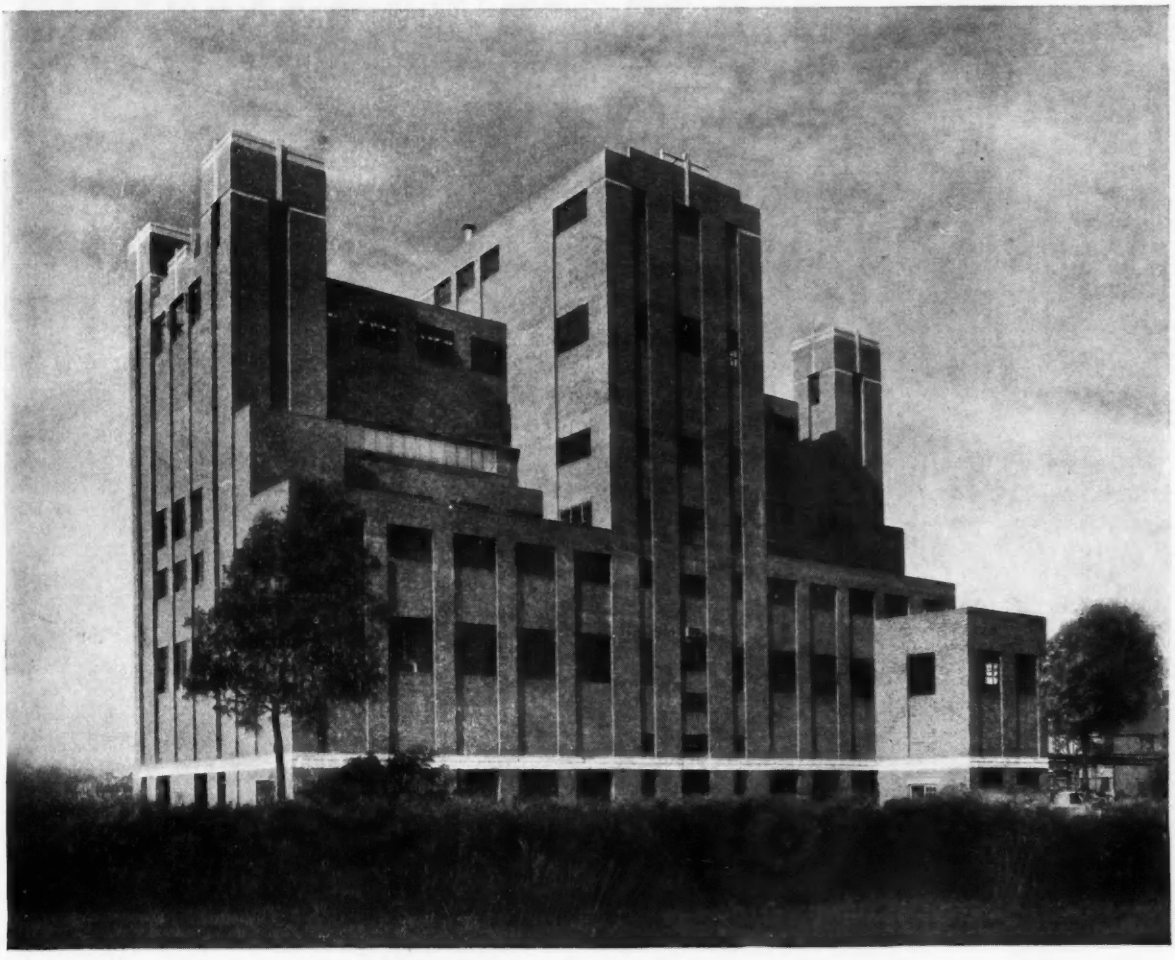

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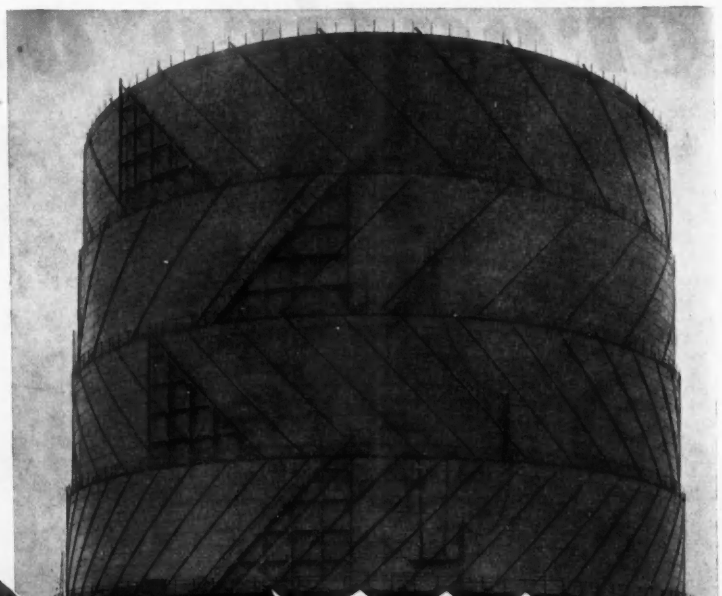

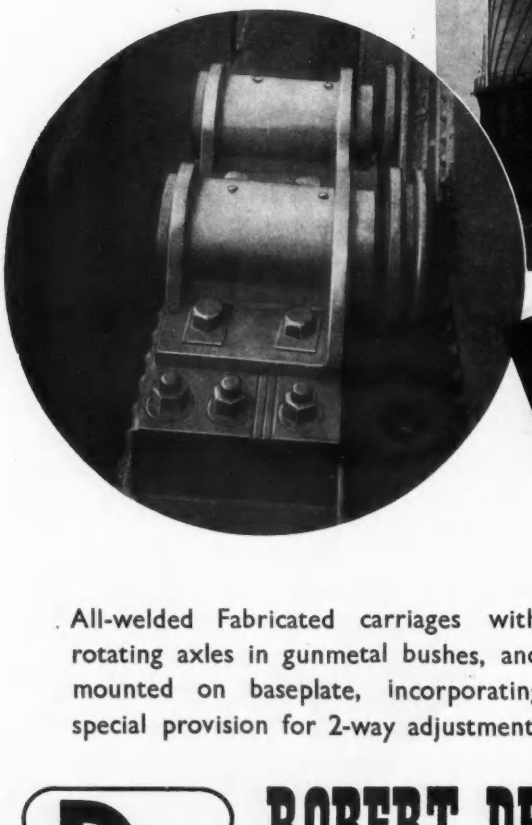

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results are promising. Table III relates to a particular charge operated under the modified conditions for two cycles. It will be seen that the available iron has not varied appreciably from the maximum that laboratory treatment could induce. It is apparent that the proportion of available iron can be maintained in suitable circumstances and it seems probable that the factors eliminated by the oil wash and the change in air admission plus supplementary steam had a large share in the decreases previously observed.

TABLE III.

Cycle No.	Available Iron as % of Dry Sulphur Free Material			
	Charged	Lab.: Max.:	Discharged	Lab.: Max.:
1	28·2	31·2	29·4	30·2
2	29·4	30·2	29·9	31·0

During the period April to September, 1949, when working up high sulphur content oxides for sale it was found possible to maintain an average gas flow of only 36,000 cu.ft. per hour (R − 8) if the efficiency of the first taker did not fall below 90%. The mean sulphur content of charges was 37%. In the corresponding period of 1950, with a mean sulphur content of 36% a rate of 76,000 cu.ft. hour (R − 16.9) was maintained without first taker efficiency falling below 90%. The average time between discharges increased from 12.4 weeks in 1949 to 13.6 weeks in 1950 and there was a pronounced decrease in caking which resulted in a reduction of anything up to two hours, or 25%, in the time taken to discharge and refill a box.

Unfortunately our experience was not so happy in the first part of the winter, when charges prepared from mixtures of part-spent oxide with new bog ore failed to live up to the promise of laboratory determinations of available iron. The trouble was due to excessive water in the new ore. Two charges were concerned. After a fortnight in the stream one of these was dropped. On opening the box it was found that the oxide bed had developed fissures due to shrinkage and that the new oxide, which originally had a water content of about 45%, had remained largely in ball formation segregated from the part-spent portion of the charge. The individual balls of new ore could be picked out easily and were virtually unaffected except for the outer skin. There had, however, been a considerable reduction in water, and after discharge the mixture was spread under cover for a week and then put through the disintegrator. The second wet charge was dropped and the reconditioned mixture used to replace it. This has now been working well with an efficiency of 95% or over in all positions. The second wet charge received similar treatment and will replace the next charge due for changing.

Laboratory tests suggest that the proportion of water in new bog ore should not fall below 15% or rise above 25% for maximum efficiency. These values correspond very well with observations of the behaviour of particular charges in service, provided the water content is based on the sulphur free material. In other words, the sulphur recovered during the purification process has no capacity for water absorption and in part spent charges containing 30% of sulphur and 25% of water the effective part of the charge really has a water content of nearly 36%. It is thought that, while the normal texture of bog ore can accommodate up to 25% by weight of water, quantities in excess of this are held in pores and capillaries that would otherwise be available as gas-ways and so serve to reduce the surface area available for reaction even when the general structure is such that no appreciable increase in back pressure is observable in practice.

With mixtures of part spent oxide and new bog ore it is not enough that the mean water content should fall between the limits suggested, since the water in new material remains there and does not readily migrate to the adjacent drier part spent oxide. For satisfactory results it is essential to reduce the water content of new ore to the order of 25% before any attempt is made to use it, and this is a matter of some difficulty if the ore has been dug from sodden fields. Such ores may contain up to 60% of water and do not readily dry out without covered storage and considerable turning. The expedient of putting a wet charge into a gas stream for a few weeks to dry, then discharging it, remixing, and recharging, proved effective when forced upon us, but it is not recommended as a sound way of achieving the object. The rational method is to anticipate new oxide requirements by at least a year and provide covered storage.

We have completed a year's experience of the addition of steam to the gas at the inlet of second taker. We have come to the conclusion that this has very little effect upon the moisture content of the oxide, since it is found that there is normally a rising temperature gradient throughout the bed. Experiments are now in progress with an intermittent water spray.

Appendix

The Determination of Available Iron.
(Developed at Fulham Research Laboratory).

Sample.—An initial sample of 3 to 4 cwt. is taken and all lumps are broken down by a punner. It is then reduced by coning and quartering to about 4 lb. This is crushed in a porcelain mortar until it all passes a 10 mesh B.S. sieve, when it is further reduced by coning and quartering to about ½ lb. The final sample is crushed to pass a 30 mesh B.S. sieve.

Apparatus.—Hydrogen sulphide generator; nitrogen supply; U tubes with ground glass tap stoppers and side-arms; drying towers; gas flow control bottle; freshly fused granulated calcium chloride.

Method.—One limb and the bend of a U tube, D (Fig. 1), are filled with calcium chloride, which is maintained in place by glass silk plugs. This is weighed. Approximately 5 grammes of

(*Concluded on p. 429*)

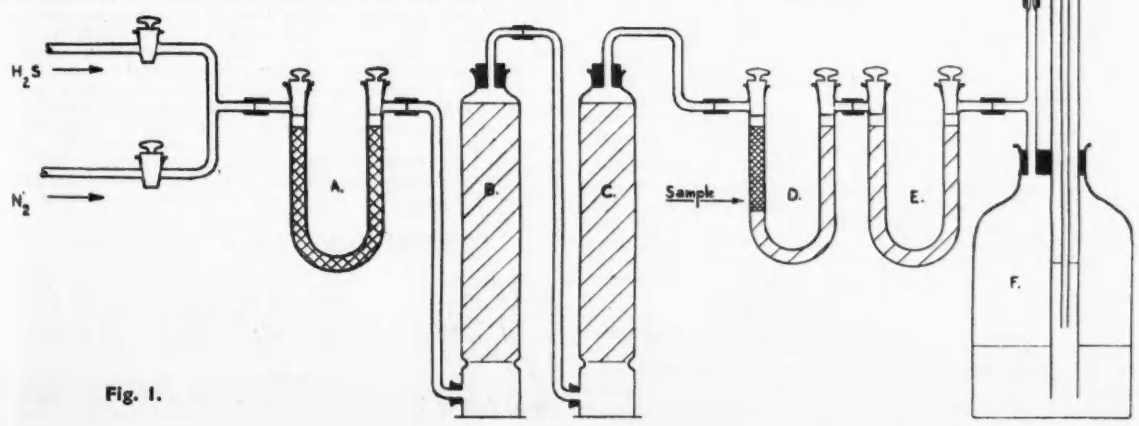


Fig. 1.

Midland Juniors Visit Sperryns

Above: *Members of the Midland Junior Gas Association inspecting the machine shop.*
Right: *Photographed in the specially prepared exhibition, this group includes, left to right, Mr. G. R. N. Sperryn (Joint Managing Director), Mr. R. B. Watkins (Midland Juniors' President), Mr. F. A. C. Pykett (Coventry), and Mr. A. A. Brockliss (Director). They are watching a demonstration of the G.807 flame failure device.*

THE visit of the Midland Junior Gas Association to the Moorsom Street works of Sperryn & Co., Ltd., on November 1 was an illustration of the friendly and co-operative relationship which has existed between the company and the gas industry for over 60 years. If any of the large crowd of Juniors present attended the Association's last visit to Sperryns in 1931, they must, we think, have been impressed both by the growth of the factory and by the modern plant installed. In any case, it is unlikely that many of the visitors were fully aware of the variety of the firm's products, for in addition to manufacturing gas cocks, thermostats, remote control valves and a host of small fittings for the gas industry, Sperryns and the other concerns under their control also produce ship and railway fittings, electrical accessories (including fires), and many products outside the requirements of our own industry.

This was the first visit of the new session under the Presidency of Mr. R. B. Watkins, of Coventry, and it can be revealed that it was the outcome of a suggestion made by him at the last B.I.F. That the idea was accepted and acted upon with both enthusiasm and careful planning was obvious to all those present at the visit.

Carefully Planned Tour

On arrival at the works the visitors were greeted by three Directors of the company, Mr. G. R. N. Sperryn, Mr. J. G. Sperryn, and Mr. A. A. Brockliss, and divided into ten groups, each under the direction of a capable guide. The tour of the works which followed and which lasted for nearly two hours, was designed to follow successive stages in the manufacture of those fittings most familiar to the gas man, tracing their evolution from raw material to finished product.

Unfortunately the space available precludes an adequate description of the many processes inspected. Suffice it to say that among the items seen first in the diecasting shop were diecast aluminium relay valve shells. Proceeding through the modern machine shops, visitors were quick to note a process in which one girl drilling operator took a casting through seven operations on as many spindles. In the tool room, a particular source of interest was a large jig borer capable of working to one ten-thousandth part of an inch. Attached to the auto shop was a small section devoted to the cleaning, degreasing and drying of oily swarf, first in a centrifuge taking a load of 2 cwt., and then in a riddle. The impressive battery of machines (most of them of British origin) seen in the automatic shop was followed by a visit to the thermostat assembly shop.

It is of interest to note that the adoption of $\frac{3}{16}$ in. tube on the thermostat instead of one of $\frac{1}{4}$ in. diameter has resulted in a quicker acting and more sensitive reaction. One snag, however, was packing, and an ingenious method has been devised whereby the thermostats are screwed in position on a frame. The company claims at least 100% testing of these products, beyond which one in every 500 is subjected to a rigorous laboratory check.

A rapid tour of the stores, which contains some 60 tons of parts, was followed by the interesting experience of seeing highly skilled hand turners practising screw threading, a method which is still employed for small quantities. There followed an examination of the section devoted to flame failure devices, where some of the many checks and tests were demonstrated. Visits also were made to the electro-plating shops and the wrapping and despatching departments. Thermostat testing on a variety of domestic cookers and the breakdown testing of gas cocks were also seen.

Adjourning to the canteen where refreshments awaited them, the visitors were both surprised and delighted to find that the walls of the room had been laid out as an exhibition, embracing almost all the fittings manufactured by the company. The display work had been executed by Mr. Norwood and the drawing office staff specially for this occasion, and a tribute must be paid to these gentlemen whose work certainly ranks as high as that of many professional display men. Each section —including one devoted to the company's new gas cock grease —had a different backing, in which the maximum effect was produced by the use of various types of wallpaper. Perhaps the most interesting was a working demonstration of the flame failure devices.

Historical Background of the Company

Welcoming the Midland Juniors to the works, **Mr. G. R. N. Sperryn** said that he hoped they would remember the visit as more than 'just a factory tour.' In order to assist an understanding of the works and their background, he thought a brief history of the company might be of interest.

Sperryn and Co. had been founded by his grandfather at a small factory in Hospital Street, in 1889. Two years later a

second works in Cambridge Street was acquired. In those days the work was mostly carried out on hand lathes, although there were also some drillers and millers. All the power was supplied by gas engines. The business quickly expanded and in 1911 the Moorsom Street factory was opened. Not long afterwards the Kaiser war broke out and an immense amount of war material was produced between 1914 and 1918.

With the rapidly increasing popularity of electricity, it was felt that some electrical fittings should be included in the range, in order to ensure continuity of production should the gas trade diminish. This precaution fortunately proved unnecessary, but it was this which brought the company into the electrical trade. The company expanded by taking over in 1911, Ingram and Kemp (gas lighting fittings), in 1919, Charles Joyner (electrical and gas fittings), and Player and Mitchell (ships and railway fittings), and 1925, Breedon & Co., Ltd. (steam and water fittings).

They also took an interest in—and later control of—a hot pressing plant, so that they now produced the whole of their hot pressings at their plant at Hall Green.

With the advent of the second world war they again turned to war materials and opened a dispersal factory at Cannock. This they maintained after the war, and it now produced the bulk of their accessories. In all, the organisation had control of four factories and employed approximately 1,000 people. The combined turnover was in the region of £1 mill. a year. They took considerable pride in keeping the factories and plant as up to date as possible and believed that they could hold their own with any other manufacturer in their line.

Extensive Export Trade

Approximately one-third of their output was exported. The export trade had been introduced by his grandfather, who travelled all over the world, opening up new markets for our products. They found markets in Australia, New Zealand, and practically all the countries in the African continent—in fact, all over the Commonwealth. They sent main cocks to Singapore, Hong Kong, and Shanghai, and their goods went to India, Scandinavia, Holland, Belgium, South America, Canada, Iceland, the West Indies, and many other places.

As they had seen during their tour, the range of products was very wide indeed. This has been brought about, to a very large extent, by the amalgamation of the firms mentioned. A very brief list of their products would include ships fittings, particularly for the Admiralty, railway fittings, which were made in the same departments and were supplied to carriage builders both in this country and overseas (such names as the Bombay & Baroda Railway, Great Indian Peninsula, Malaya, Peruvio, Ceylon, Rhodesia, Nigeria, Nyasaland, San Paulo and Tanganyika were commonly seen on fittings in production), and electrical accessories, including electric fires. Gas fittings constituted their major range, from ¼ in. iron bushes up to 3 in. main cocks. They were very proud of their special patented spring and lubricated main cocks. They had pioneered the spring loading of plugs in all cocks and still lead in the spring mains. The incorporation of an oiling device increased still further the popularity of their design of main cocks. For several years they had been experimenting with gas cock greases and recently developed and brought on to the market a new grease which was suitable for all gas plug cocks, including those used for butane gas. The development of this grease had led to further improvements in main cock design and they were now changing over to the latest modification, which retained the spring but replaced the oiling device with two grease reservoirs which they estimated would hold enough grease to last the lifetime of the cocks.

They also made the Spersom thermostats, of which they had produced about two million. In 1927 the first few were almost entirely hand-made—even the number bands were made from fine brass castings. The latest design of thermostat, the dismountable model, was a very far cry from early efforts. It was made to extremely close tolerances, which ensured interchangeability and accuracy of control.

For industrial installations they made thermostats of the direct acting type in sizes from ¼ in. to 1 in., and relay valves in sizes from ¼ in. to 3 in. These valves also had special features which they felt offered great advantages over other makes, particularly in the guiding of the valves. All their relay valves were now made in aluminium and a great deal of care had been taken to ensure clean and full gas-ways. These thermostatic controls were used in innumerable appliances, from domestic water heaters to industrial salt baths, metal pots, heat treatment ovens, and so forth. They also had a place in the agricultural sphere, where they were used for bulb sterilisers and chicken brooders. In food processing they were used for banana ripening rooms, bakers' ovens, etc.

Developments in Flame Failure Devices

They also manufactured the thermo-magnetic flame failure device, in sizes from ¼ in. to 2 in. and they had developed their own design of multi-safe control device which safeguarded non-interlighting multi-burner ovens against flame failure, with the use of only one thermo-magnetic valve.

Another item of interest of which they were justifiably proud was the length of service of the members of their works and staff. They had in this plant five who had completed over 50 years, 29 who had completed over 40 years, 64 who had completed over 30 years, and 106 who had completed over 20 years. The people who had completed ten years and over made up nearly 30% of their strength. With today's conditions of abnormally heavy labour turnover, they considered they had a record which showed a good relationship and understanding in their organisation.

Responding, the **President** expressed the visitors' interest in this survey of the build-up of the company. It was typical of many in the Birmingham area which had started before the turn of the century, and it had built up a reputation in the gas industry which was not exceeded by any firm making similar types of apparatus. He had personal knowledge of the vast amount of time and energy which had been devoted to the development of their thermostats for industrial purposes, which had constituted a very real service to the gas industry. They had been through the works and had marvelled at the astonishing number of small parts handled. It was generally agreed in the industry that 'Sperryns will never let you down,' and that enviable reputation became all the more remarkable when one saw the variety and complexity of some of the components they manufactured. The real answer was in the product, and how often did the gas man have to throw out a gas cock?

Seconding this vote of thanks, **Mr. D. J. Ward** (Birmingham), Senior Vice-President of the Association, referred to the cleanliness of the works, the wonderful hospitality, and the fine display which had been produced for their benefit.

AVAILABLE IRON IN PART-SPENT OXIDE—
(*Concluded from p. 427*)

the sample is placed in the other limb and the tube re-weighed to determine the exact weight of sample used. A second U tube E, is filled with calcium chloride and weighed.

The train is then set up, consisting of a U tube, A, filled with hydrated ferric sulphide, followed by two towers B, C, filled with calcium chloride, followed by D and E. It is swept free from air by nitrogen and then swept free from nitrogen by hydrogen sulphide, when a gass rate control bottle, F, set to pass 20 ml. per hour is connected to the outlet of E and hydrogen sulphide is passed until the weight of D and E remains constant. (Twelve to 18 hours usually suffices.) The apparatus is then swept out with nitrogen and D and E are re-weighed. The increase in weight is due to the reaction between the available iron in the sample and hydrogen sulphide, the water formed being absorbed by the calcium chloride. If the latter is fresh there should be no increase in the weight of E.

NOTE.—The purpose of A is to absorb traces of oxygen that may contaminate the nitrogen and hydrogen sulphide.

Calculation of Results.

If x = weight of sample
y = increase in weight of D + E
a = available iron as Fe_2O_3

$$a = y \times \frac{160}{102}$$ or as a percentage of the original sample $$= y \times \frac{160}{102} \times \frac{100\%}{x}$$

Care must be exercised in the application of this method to the determination of available iron in new bog ore, since other compounds may be present, capable of absorbing hydrogen sulphide but not of subsequent reoxidation to their initial state.

A New Source of Fuel—

NATURAL GAS FROM COAL MINES

By LESLIE T. MINCHIN, B.Sc., M.Inst.Gas E., M.Inst.F.

In the following paper, given to the London and Southern Junior Gas Association, the author outlines the present position and points to the possibilities of the utilisation of methane from coal mines.

SIR A. N. BRYAN, H.M. Chief Inspector of Mines, has stated that there are many coal mines in this country giving off 4-5 mill. cu.ft. of methane daily. On a simple heat content basis this represents 120-150 tons of coal per day, but since methane is a refined fuel which can be transported and burnt more economically than raw coal, the real equivalent is a good deal higher. One mill. cu.ft. of methane is equivalent to 2 mill. cu.ft. of town gas. Dr. A. Parker, Director of Fuel Research, has computed that the total world resources of fuel in this form are equivalent to 60,000 mill. tons of coal, and are about three times the world's petroleum resources.

All the methane associated with coal cannot possibly be drained off for commercial use, since evidently men must go down the mine and a ventilation system must be provided. The work done in Germany, Belgium, Saarland, and in this country suggests that perhaps half the total volume can be drained off and piped to the pithead in a relatively pure state.

Recovery on the Continent

In Belgium, in March, 1951, 15 coal mines were producing methane and selling it to the Distrigaz Company. This system had been achieved only 18 months after the first mine brought methane to the surface in 1949. By March, 1951, the volume of gas being sold per day was 6½ mill. cu.ft., equivalent to 13 mill. cu.ft. of ordinary gas (the average daily gas usage of Nottingham—a little less than that of Leeds).

The first installation, at Frameries (Mons), covered the whole capital costs incurred by the sale of gas during the first four months of operation.

In the Saar, four mines are at present (August, 1951) contributing 1½ mill. cu.ft. of methane to the national economy. Before long eight more mines expect to be selling gas. The Saar-Ferngas A.G. (the pipeline company) is laying special connecting pipes and expects to be buying about 2½ mill. cu.ft. of methane by the end of 1951. This is equivalent to the average gas consumption of York last year.

In Britain, only one colliery is bringing methane to the surface. It is producing ¾ mill. cu.ft. per day, but so far it is only used to fire the colliery's own boilers. This saves 260 tons of coal per week and the labour of three men. A bigger volume could almost certainly be produced here if it were needed.

The uses to which this gas can be put are as follows:—

(*a*) Steam raising at the colliery (saving coal).
(*b*) Firing of coke ovens (liberating coal gas for sale).
(*c*) Sale to large consumers—*e.g.*, metallurgical furnaces.
(*d*) Conversion by a re-forming process to a composition similar to coal gas.
(*e*) Direct addition to coal gas supplies, after dilution with waste gas or water gas.
(*f*) Compression into cylinders for road transport.
(*g*) Ultimately it might be practicable to supply the gas without conversion for general distribution; this necessitates a wholesale conversion of all gas-burning appliances.

In Belgium (*b*) to (*e*) are in regular use, though (*e*) is a temporary expedient, not very desirable. In the Saar, (*a*) to (*c*) and also (*f*) are in regular use; in Britain only (*a*) is practised.

From the point of view of national fuel policy, and also on grounds of safety, (*a*) steam-raising at the pithead is not a very good use for colliery gas, though it may be better than wasting it. The present tendency is towards the use of low-grade coal for this purpose—fuel which could not be economically transported because of the high ash content. Moreover, the safety of the colliery demands that the steam pressure must not be solely dependent on a gas supply from underground; otherwise in the event of an accident the winding gear might be immobilised just when most needed.

Uses (*b*) and (*c*) are much better. Methane used for firing a colliery coke oven will liberate about twice its volume of coal gas. This is the principal use in the Saar valley. In the event of an interruption in supply (which will be very seldom) the settings could be kept hot with coal gas. Application (*c*), sale to large consumers, is probably only practicable where several collieries supply a methane grid as in Belgium.

Applications (*d*) and (*e*) relate to addition to coal gas. The re-forming process, although it needs a certain amount of plant and consumes some heat, is much the better alternative, since the percentage of (methane + waste gas) mixture which can be added without disturbing the combustion properties of town gas is relatively small.

Safety of the mines is greatly increased by this process; indeed in most cases the draining of methane was begun purely as a safety measure, to reduce the amount of gas in the mine air. After the gas had been captured, it seemed a pity not to use it as fuel. It is important to remember that draining off the gas often *increases* the coal output of a mine.

What Britain seems to need is a greater stimulus to bring methane to the surface. This is linked up with the provision of a market. The exploitation of methane from mines has been greatly encouraged abroad by pipeline companies (gas transport companies) such as the Ruhrgas A.G. in Germany, and, particularly, the Distrigaz S.A. in Belgium. I think that we are in need of some such organisation in Britain; but even without it a great deal could be done.

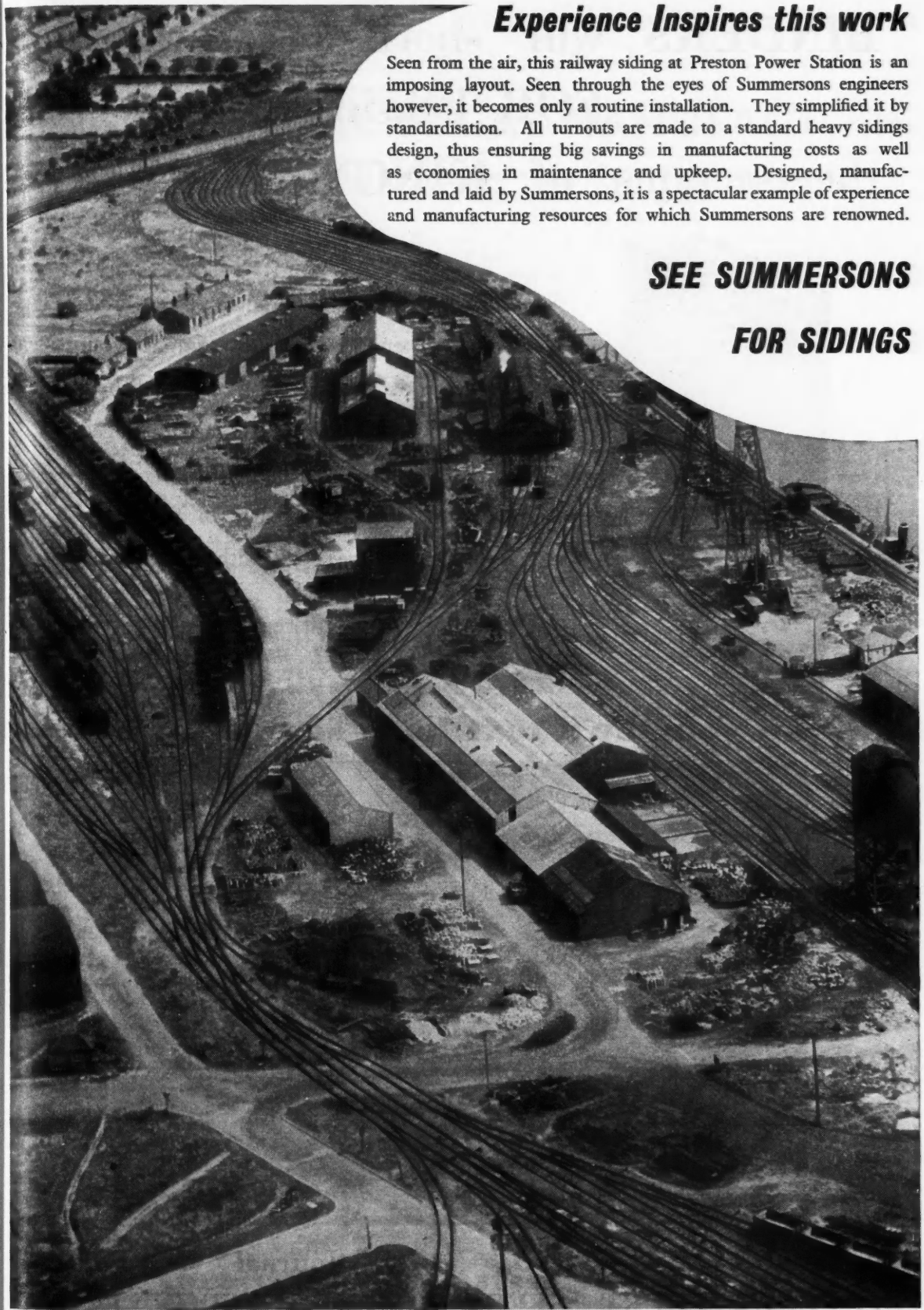
Extending Application

At the Lievin group of collieries in Northern France work was begun in 1950 by the drawing-off of gas from an old working. The gas is being brought to the surface through an 8 in. pipe, and a Rootes blower at the pithead serves as an exhauster. For the time being gas is being mixed with gas from the Lievin coke ovens and sent by an existing main to the ovens at Drocourt, nearby. The addition of this methane enables more coke oven gas to be sold to the national network. As soon as it is possible it is hoped to extend the work and provide a separate set of mains for the methane.

In the Ruhr district of Germany the number of collieries bringing gas to the surface increased from two to eight during 1950. Six of the eight were actually making use of the gas for one of purposes (*a*), (*e*), and (*f*) mentioned previously. The volume of gas thus employed increased during the year from 6 to 44 mill. cu.ft. (pure CH_4) per month. P. Schulz reckons that four heat units of gas = seven heat units coal; this would make 1 mill. cu.ft. CH_4 = 52 tons of coal.

Some idea of the constancy of this source of supply may be gauged from the results of one mine (Hirschbach, in the Saar) over a three-year period. Average monthly yield: 13.3 mill. cu.ft. (expressed as pure CH_4). Minimum monthly yield 9.1 mill. cu.ft. Total volume drawn off in three years, 480 mill. cu.ft. = at least 15,000 tons of coal (on a simple B.Th.U. basis).

(A report of the discussion will be found on page 436)



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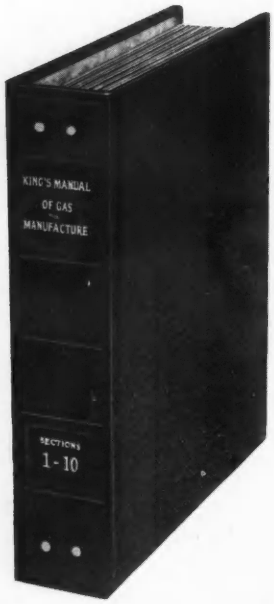

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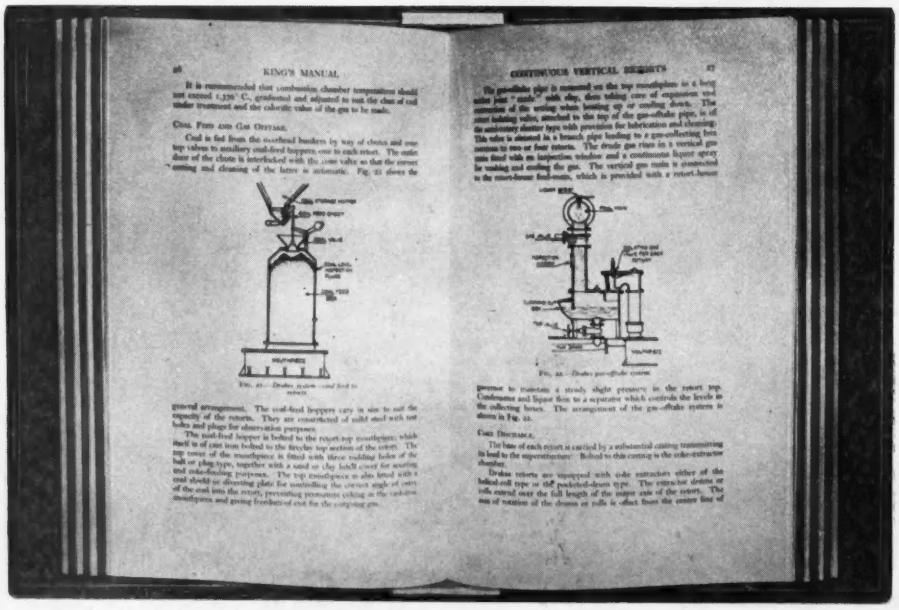

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I.G.E. EDUCATION REGULATIONS

By J. WOODCOCK,
Colwyn Bay

In his address as Chairman of the North Wales Section of the Wales and Monmouthshire Junior Gas Association, Mr. Woodcock has several critical comments of a constructive nature and directs thought to major issues in the education of the gas engineer.

SOME three years ago the Institution of Gas Engineers published a revision of the Education Regulations which set out an entirely new syllabus of requirements for the Associate Membership examination. Prior to this there had been, by name at least, no such examination. The old syllabus had long been out of date. Ancillary subjects which might have been adequate for the 'thirties had become out of date in the 'forties, and World War II caused delay in revision.

The gas engineer has been described as a Jack of all Trades. Whether this is a good or bad state of affairs is a question which must be answered. Prior to nationalisation, with the larger number of small and medium sized units in operation, the units were independent and could not afford to have experts on each of the many complex subjects met with in the manufacture and distribution of gas. However, the present trend is towards the larger unit, and the duties of the individual technician will become steadily more specialised. While an extensive knowledge of the gas industry will always be a more than useful attribute to any gas engineer, the knowledge for carrying out day-to-day routine will be that of the specialist.

The Wales Gas Board has maintained and even developed the standing of the local manager, but the policy in most large organisations—indeed, that followed by the majority of area gas boards, and I believe, all the electricity boards—has been a splitting of the management function. This functionalisation of industry is, except for the co-ordinating section, dependent on specialist knowledge.

The revised Education Regulations, while representing a definite advance in academic standards, have in no way narrowed the field of study. It seems that the new generation of gas engineers are still expected to be chemists, physicists, and electrical, structural, civil, and mechanical engineers all rolled into one. Still to qualify as a Jack of all Trades may be a possibility, but the chance of mastering all these 'trades' —in themselves complex subjects—is remote.

A Severe Handicap

In particular difficulties are the students in areas remote from technical colleges, a position experienced in the North Wales area. The syllabus of the Institution does not closely follow any one of the standard courses of the technical colleges and the intake of students from the gas industry is insufficient to merit the education authorities instituting a special course for the gas engineer. Special courses seem practicable only at the largest educational establishments, and in North Wales they appear to be impossible. An estimate of one new pupil gas engineer each year is reasonable for the whole North Wales area; two pupils per year would be a maximum, and the prospect of any authority running a special course for two pupils merits no further discussion. The students themselves may be well aware of their final goal, but are through no fault of their own becoming steadily more confused as to the manner of attaining it. An ill-defined plan of study is worse than none at all and results only in the pupils concerned losing interest in their studies and consequently their jobs. The sufferers in the first instance will certainly be the pupils; ultimately, it must be the industry they are attempting to serve.

The foregoing remarks do not refer directly to training for management of the smaller undertaking, in which academic knowledge has been regarded as a luxury rather than a necessity. The running of the small works will always be best accomplished by the man with practical experience, but many local managers, having had experience of specialist services offered by the Wales Gas Board, will perhaps concede that specialist knowledge, properly handled, can be of immense benefit to the industry. There is no doubt that the efficiency of many small undertakings has increased over the past two years; this can only be attributed to either the work of the local manager and his staff or to the help received in chemical control, maintenance, and installation of plant or technical advisory service from visiting specialist staff.

So far this address has been largely of a critical nature, but its purpose has only been to find any weak spots in one of the foundations of the industry—namely, the education system. The common preliminary examination is no doubt a great step in the right direction, but more steps could well have been taken on the same route. The major criticism which must be levelled against the Associate Membership examination is, as mentioned previously, that the field of study is too wide. Previously there has been a distinction made between Supply and Manufacture not only in the main subject examination but also to some extent in the ancillary subjects required. It may be advisable to allow the student to specialise still further in his ancillary subject knowledge.

The examinations for Section A and B of the Institution of Mechanical Engineers would surely constitute sufficient ancillary subject knowledge for any gas engineer. This course of study is readily available at any major technical education establishment and for the majority of pupils could be completed in four years. (It is assumed that pupils who have passed the School Certificate with credits in the required subjects will be exempted from the first year of a five-year course.) In the fifth year the pupil could study for the main subject of gas engineering.

To further this argument, it seems reasonable that on a large works the person responsible for control of the maintenance of all mechanical plant would preferably be an Associate Member of the Institution of Mechanical Engineers or at least possessed of a National Certificate in Mechanical Engineering, together, of course, with the necessary practical experience. Despite any extensive knowledge of the process of gas manufacture that this member of the staff may acquire, he would not, if the present Associate Membership examination qualifications were strictly enforced, be eligible for corporate membership of the Institution until he passed examinations requiring a not inconsiderable knowledge of chemistry.

Easing the Problems of Technical Colleges

On the other hand an entrant to the industry who has a particular bent towards the chemical side receives only limited instruction in that subject. A knowledge of inorganic chemistry appears to be the main objective of the syllabus under the heading 'Applied Chemistry (Joint Section B. Group VIII, Examination Subsection (iii) b).' A notable omission is any mention of qualitative or quantitative analysis, while some knowledge of the principles of organic chemistry would not seem out of place. It should be appreciated that due to the wide range of the full syllabus for the Associate Membership examination that neglect of detail was unavoidable. A syllabus approximating to that of the Institution of Chemical Engineers or the National Certificate in Chemistry, together with the

main subject of Gas Engineering, would seem to be a more satisfactory qualification for those who are primarily interested in chemical control of the carbonising process.

A splitting-up of the syllabuses in this manner would ease the problem of the technical college in finding a suitable course of study to comply with the existing conditions of the Associate Membership examination laid down by the Institution of Gas Engineers and would in no way lower the academic standing of gas engineers relative to members of other professional engineering bodies.

Most pupils entering the gas industry have aspirations to positions on the executive side such as their ability and opportunities may allow. It seems unfortunate in this respect that the syllabus of the Institution contains no mention of that most important subject of engineering economics. Neither engineer nor scientist is playing his full part in society if he confines his outlook to technical problems and pays no attention to the use or misuse or lack of use of the productive process he is building up. All technical specialists have a duty to see that the joint product of their labour is utilised to the fullest efficiency and the engineer is entitled to demand of the whole industry the standard of efficiency demanded in his particular technique. Every gas engineer is interested in the productive efficiency of his own works, but his interest as a member of society should extend to productive efficiency relative to the whole resources available. Technical specialists must interest themselves in the organisation and conduct of the society to which they are devoting their labour.

Earlier it has been pointed out that a main principle in the development of any large industrial organisation is functionalisation with the accent on the specialist. This, however, particularly in a nationalised industry, should not bar any worker from insisting that his own efficiency should not be nullified by inefficiencies in other departments or in the general administration of the enterprise. The whole organisation of society is as much the concern of the engineer as is the technique of production. Nothing is more responsible for the toleration of inefficiency in social and economic life than the apathy of the ordinary citizen.

Perhaps an even more important side in the education of the student gas engineer is the manner in which his works training is conducted. Difficulties arise in their thousands, and unless a definite plan is followed the student may quickly begin to feel he is getting a raw deal. The pupil should not have cause to feel that he is merely a convenient source of cheap labour to the undertaking concerned. He must certainly work his passage, for the hard road has proved itself the surest way to success in any position.

Experience has to be gained in all the phases of gas manufacture or distribution, but in many cases existing staffs find themselves too busy with their everyday duties to give adequate instruction to the pupils. It may well be that the introduction of short intensive training courses for groups of pupils in the subject of gas manufacture would solve this difficulty. In any case, where this subject is included in the curriculum of the technical college the instructor or lecturer has to be supplied from the industry. The possibility of such courses may be worth consideration and would relieve the technical colleges of giving instruction which the industry is in a better position to supply direct.

NATURAL GAS FROM COAL MINES (*Concluded from page 430*)

DISCUSSION

The President (Mr. J. D. C. Woodall, South Eastern), opening the discussion, said that a new gasmaking station was projected for erection on the Kent coalfield by the South Eastern Gas Board, and he would have to see if use could not be made of gas from the mines.

Mr. J. V. Rigg (North Thames) referred to another source of natural gas—namely, the gas produced at sewage disposal works, such as the one at Mogden which was visited recently by the Association. Here the production of methane was 528 mill. cu.ft. per annum, most of which was used internally for power and heating. In spite of this, there was 83 mill. cu.ft. for which no use could be found, and this was just thrown into the atmosphere. He reckoned that if all the methane from this kind of source was made use of, enough would be obtained in the country to provide gas for a city the size of Coventry. Methane could also be produced from the fermentation of other waste organic matter, such as straw.

Mr. R. E. Johnston (South Eastern) said that one factory in Croydon, near a sewage works, was using this gas for steam raising and also for radiant heating panels.

Mr. Clark (North Thames) enquired if there was any H_2S present in such gases.

Mr. Minchin replied that there was usually a considerable amount of H_2S in sewage gas, but none in gas from coal mines. Coal mine gas sometimes contained a little hydrogen, but the only likely impurity was air. Under good conditions percentage of air would be only 5-10%, but if there was considerable leakage it might go up to 50% or even 60%.

Mr. F. E. Mills (North Thames) mentioned that the Mogden gas contained some 36% of CO_2 and also some H_2S.

Mr. A. W. Mayo (North Thames) said that a national emergency seemed necessary to make us use our natural resources properly. During war the use of CH_4 was seriously considered. He knew of a disused colliery in South Wales where an 8 in. pipe leading from the shaft had gas—mostly methane, he believed—rushing up all day and all night. Unfortunately, it was in an isolated district, so piping it to a potential user was impossible. Using it in bags on top of road transport vehicles was considered, but their radius of operation was rather small and this was an out-of-the-way place. Liquefaction of the methane was more practicable, but involved expensive plant, and the battle of the Atlantic was largely over by the time this came up for serious consideration, so it was not proceeded with. He himself, however, had driven round London in a van powered with liquid methane, and it was a fuel having excellent anti-knock characteristics; one really needed an engine with a very high compression ratio to enable one to take full advantage of the fuel.

Mr. Levine said Germany in 1937 faced an economic situation something like ours today, and they made use of CH_4. He had been driven to the Baltic coast from Hamburg along an autobahn at 60 m.p.h. in a vehicle powered by methane.

Mr. Minchin was interested to hear of these experiences. Methane could have been obtained from Point of Ayr colliery during the war, for plant to enable it to be extracted was actually put on order in 1939; however, war needs prevented it from being delivered till after the war. As regards Mr. Mayo's isolated South Wales mine, this was the situation which made a 'methane grid' desirable. It could be planned to collect from a number of collieries, as in Belgium, and deliver to the nearest point at which use could be made of it.

Mr. Johnson (South Eastern) said reference had been made to the Croydon Corporation having used methane from sewage works for many of their vehicles. A four-stage compressor was used, delivering gas to cylinders at 5,000 lb./sq.in. The method was only suited to some classes of vehicles—they had to be rather heavy to take the massive cylinders. Unfortunately, the tendency nowadays was to revert to diesel and petrol engines because of the great wear in gas-powered vehicles—due, he believed, to the impurities in the gas.

Mr. Minchin wound up the discussion by describing briefly, with the aid of diagrams on the blackboard, some of the techniques used for extracting gas from coal measures. He hoped that the gas industry would begin to take a more liberal attitude to the various sources of gas outside their own works, to which reference had been made that evening.

Mr. C. D. Shann (North Thames) proposed a vote of thanks to the author.

TRADE NEWS

Gibbons Bros.

An improved cremator is announced by the above company. The object of all cremators is to complete the process of incineration as quickly, cleanly, efficiently and as economically as possible. This one, it is claimed, does this by dependence more on the supply of air from the electric fan than by the actual gas fuel used. From observations of the cremator extending over a number of years, it has been found that a temperature of 900°C. is easily obtained, and that the average time taken for cremation is one hour and twenty minutes. Of that time, for the first cremation of the day, gas fuel is required for about three-quarters of an hour. For the second and third cremations half an hour of gas will be sufficient, and after this the cremator will run almost free from gas for the remainder of the day.

The cremator is constructed of an upper and lower chamber, with a grilled firebrick floor between, with three rows of gas and air jets in the upper chamber and two in the lower. The coffin is placed in the upper chamber, resting on the firebrick floor, the gas being lit in the lower chamber. After twenty minutes this gas is turned off and that in the upper chamber lit, and when the required temperature has been reached the gas is turned off altogether, and the cremator left only with air from the fan, until incineration is complete.

When this has been accomplished the ashes drop through the grills in the firebrick floor, and are collected on an iron sliding plate just inside the door of the lower chamber. Here more air is blown through them to assist the cooling process. The sliding plate is then withdrawn and the ashes drop into a tray with a perforated bottom. By rocking this tray gently backwards and forwards the dust from the coffin wood drops through the perforations into a box below. The tray, which then contains only the cremated remains, is then ready to be removed from the cremator.—*Gibbons Bros., Ltd., Dibdale Works, Dudley.*

Brookhirst

The completion of large works extensions at Brookhirst Switchgear Ltd. has been used by that Company to mark its golden jubilee; actually it was founded rather more than fifty years ago by the late Mr. John A. Hirst, who will always be remembered as one of the pioneers of the motor control industry. Speakers at the opening ceremony of the Jubilee Building were the Mayor of Chester, Alderman E. W. Keyes; the architect, Mr. A. Ernest Shennan, M.A., F.R.I.B.A.; and the chairman of the Company, Mr. J. O. Knowles, M.A., M.I.E.E., M.I.P.E.

In the course of his speech Mr. Knowles mentioned that altogether the extensions represented an increase of some 45,000 sq. ft. in covered floor area and included extensions to assembly, test, and inspection departments, a new packing bay and new warehouse, as well as a large Social Hall with kitchen, lavatories, cloakrooms. Later in the proceedings, long service presentations were made to one hundred and thirty-six employees, each having not less than twenty-five years' service. *Brookhirst Switchgear Ltd., Chester.*

J. & S. Newman

Industrial eye shields which give complete protection without discomfort to the bridge of the nose or the ears have been a long felt need in industry. An eye shield which, it is claimed, answers all the problems connected with this important side of safety and welfare in factories, hospitals and other industrial organisatons where the eyes are under stress or danger. 'Safespex' offer completely unsplinterable and ventilated goggles, toned to individual industrial and institutional requirements, *e.g.*, green for welding, red for X-ray work, grey/blue for sun glare and clear for general use, all giving completely unrestricted field of vision. The wearer of these safety goggles, if wearing spectacles has no difficulty in placing them over his present eye-wear. They rest only on the cheek bones and the forehead, thus avoiding any discomfort to the nose or ears. An elastic band holds these lightweight goggles easily in place. *J. & S. Newman Ltd., 100, Hampstead Road, London, N.W.1.*

Ductube Co., Ltd., of 235-241, Regent Street, W.1, have published a new leaflet dealing with pneumatic rubber tubing for forming single and multiple ducts in any type of concrete, rendering unnecessary the use of expandable conduit. It is made in approximately 60 ft. lengths and any number of lengths may be joined together to produce any required length of duct—the only limiting factor being the deadweight of the tubing on withdrawal.

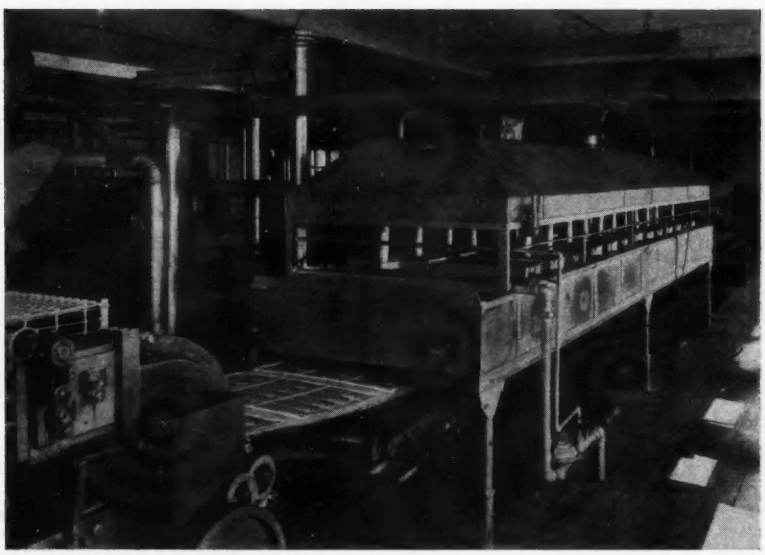
Sales Representation for Lancashire Dynamo & Crypto (Mfg.), Ltd., in Northern Ireland is now in the hands of Burke & Son, tLd., 18, Strangford Avenue, Belfast. Mr. J. McCandless, M.SC., M.I.E.E., M.INST.F., until recently Deputy Electrical Engineer for Belfast, and now a Director of Burke & Son, Ltd., will act as manager for Northern Ireland.

Thomas De La Rue & Co., Ltd.

A GAS infra-red tunnel for drying paperboard after varnishing has recently been installed at a factory of Mardon, Son, and Hall, Ltd., Bristol. The tunnel is fitted with 26 horizontal type panels radiating downwards and adjustment is provided in the legs of the oven so that the height of the panels above the work can be varied. A woven conveyor belt carries sheets of paper and board through the tunnel at a speed of 85 ft. per minute.

The oven gives a drying time of 15 seconds, but for average work 10 seconds is sufficient. and on certain classes of work where only a thin coat of varnish is applied, a drying period of six seconds gives a good result. When these shorter drying times are required they are obtained by using only a proportion of the panels. The high speed of drying keeps curling to a minimum, and the varnish is sufficiently hard to enable the sheets to be stacked immediately after leaving the tunnel.

The installation was designed and constructed by Thomas De La Rue & Co., Ltd., Gas Division.



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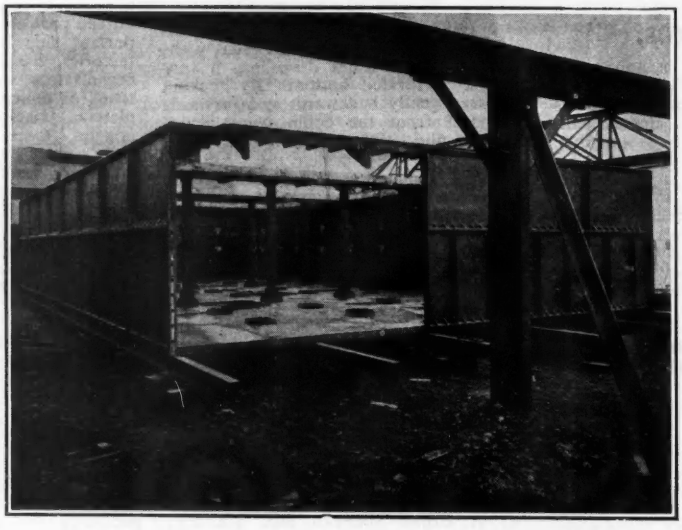

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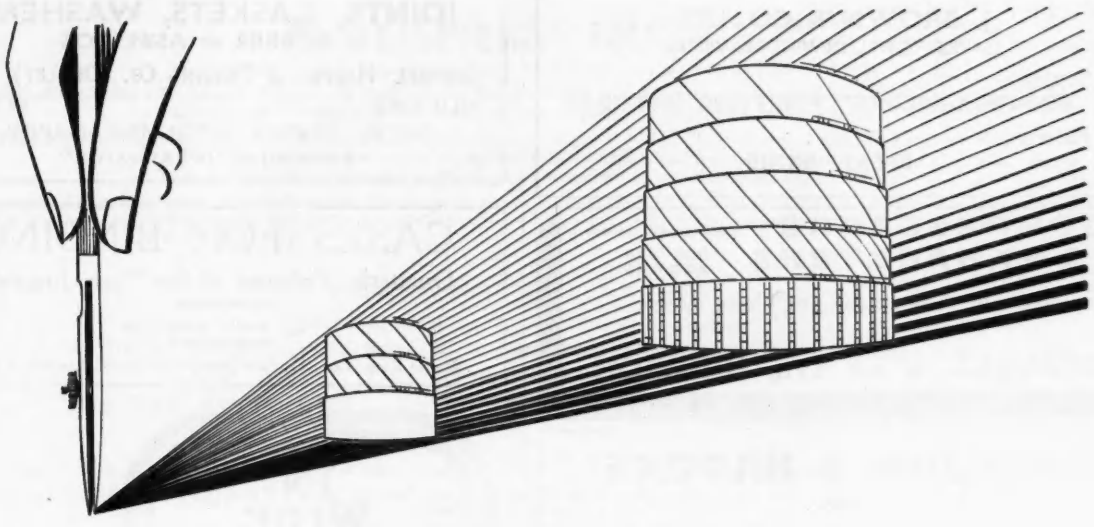

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Classified Advertisements : All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

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The appointment is of a permanent nature and pension arrangements will be discussed with short list candidates.

Starting salary will be within the range of £650-£800 per annum, depending upon age, qualifications and experience.

Applications, giving age and full particulars, should be sent to the Staff Controller, North Thames Gas Board, 30, Kensington Church Street, London, W.8, quoting reference number 91.

WALES GAS BOARD

GROUP ACCOUNTANT—

CLWD AND DEESIDE GROUP.

APPLICATIONS are invited from qualified Accountants for the above appointment for which the salary offered is £850 per annum.

The person appointed will be attached to the Rhyl Gas Undertaking and will be responsible for the whole of the accountancy work throughout the Group.

Experience of public utility accountancy, particularly of accountancy in the gas industry, will be an advantage.

The successful candidate will be required to pass a medical examination and, subject to any protected superannuation rights, will be required to subscribe to such Superannuation Scheme as the Board may adopt.

Applications, furnishing personal details and particulars of experience and qualifications, with the names of two referees, should be sent to the undersigned to arrive not later than three weeks after the appearance of this advertisement.

C. B. MAWER,
Secretary.

1/2, Windsor Place,
Cardiff.

NORTH EASTERN GAS BOARD

WAKEFIELD GROUP.

BATLEY DISTRICT.

TECHNICAL ASSISTANT—WORKS.

APPLICATIONS are invited for the above position at a salary in accordance with A.P.T. GradeVII of the Salary Scales of the National Joint Council for Gas Staffs, range £5C0 to £580 per annum.

Applicants should possess the Higher Grade Certificate of the Institution of Gas Engineers (Manufacture) and should be experienced in the control of vertical retorts, able to carry out the normal routine works tests and it would be an advantage to have some drawing office experience.

Applications, stating age, qualifications and experience, should be addressed to the Group General Manager, Wakefield Group, North Eastern Gas Board, Warrengate, Wakefield, to arrive not later than ten days following the issue of this advertisement.

J. C. GARDNER,
Secretary.

Bridge Street,
Leeds, 2.
October 2, 1951.

REPRESENTATIVE to call upon Gas Undertakings and Lighting Authorities in West Midlands and South Wales required by leading manufacturers of Lighting and Heating Appliances. Write, stating experience, age and salary required to : No. 9980, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

A LEADING MANUFACTURER of Gas Cookers wishes to engage a young man on the Sales side of the Organisation. The successful applicant will be required initially to spend some months undergoing specialised training in the factory. Applicants must be Corporate Members of the Institution of Gas Engineers, and should be between the ages of 25 and 35. This position carries an adequate salary, with excellent prospects of advancement, and a full pension scheme is available. Apply No. 9977, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

EASTERN GAS BOARD

IPSWICH DIVISION.

TECHNICAL ASSISTANT.

A TECHNICAL ASSISTANT is required at the IPSWICH WORKS of this Division.

Applicants should be of good education and training and have obtained at least the Higher Grade certificate (Manufacture) of the Institution of Gas Engineers. Experience on large works operating W-D continuous retorts and C.W.G. plant would be an advantage.

Salary will be in accordance with Grade VII of the A.P.T. Scale (Provincial 'A') starting at £500 per annum.

Applications stating age, qualifications and details of training and experience, together with the names of two references should be sent to the undersigned not later than November 24, 1951.

W. J. COLLINS GARRARD,
General Manager, Ipswich Division.

Eastern Gas Board,
Crane Hill Lodge,
London Road,
Ipswich.
November 1, 1951.

EASTERN GAS BOARD

WATFORD DIVISION.

APPOINTMENT OF
DEPUTY MECHANICAL FOREMAN—

ST. ALBANS WORKS.

APPLICATIONS are invited for the post of DEPUTY MECHANICAL FOREMAN, St. Albans Works. Applicants should be between the ages of 30 and 40 years and preferably have experience of general Mechanical and Electrical maintenance work in a large gas works, besides the ability to direct and supervise skilled Craftsmen.

The successful applicant's salary will be within Salary Grade VIII of the Agreement of the National Joint Standing Committee for Intermediate Grades (£475 to £520 per annum) and he will enjoy Class I Conditions of Service. A house, at a reasonable rental, will be available.

The appointment will be subject to a satisfactory medical report being received.

Applications should be made in writing to the undersigned not later than November 30, 1951.

H. C. DUNBAR,
Works Engineer.

Gas Works,
Holywell Hill,
St. Albans, Herts.

SCOTTISH GAS BOARD

ALLOA-STIRLING SUB-GROUP.

STIRLING DISTRICT.

WORKS TECHNICAL ASSISTANT.

APPLICATIONS are invited for the post of WORKS TECHNICAL ASSISTANT at the Gas Works, Stirling. Candidates should hold the I.G.E. Ordinary Grade Certificate in Gas Engineering (Manufacture), and practical experience in Gas Continuous Vertical Retorts, C.W.G. plant and the associate ancillary plant will be an advantage.

The salary will be within Grade II of the National Salary Scales (Maximum £410 per annum).

Applications stating age, particulars of education, training, qualifications and experience, should be submitted to the Sub-Group Manager, Scottish Gas Board, Stirling District, Thistle Street, Stirling, within fourteen days of the publication of this advertisement.

SCOTTISH GAS BOARD

SOUTH EAST DIVISION.

FALKIRK DISTRICT.

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT in the Falkirk Works.

Experience is desirable in plant operation and control in a Gas Works and the Ordinary Grade Certificate of the Institution of Gas Engineers in Gas Engineering (Manufacture) or an equivalent qualification in Chemistry or Mechanical Engineering is required.

The salary attached to the post will be on the scale £275/£410 per annum, the starting point being determined by the age and experience of the successful applicant.

Applications stating age, training and experience should be addressed to the undersigned within fourteen days of the appearance of this advertisement.

WM. EWING,
District Manager.

Gas Works,
Falkirk.

SCOTTISH GAS BOARD

PAISLEY DISTRICT.

APPOINTMENT OF SHOWROOM MANAGER.

APPLICATIONS are invited for the post of SHOWROOM MANAGER in the Paisley District Undertaking.

Applicants must have had experience of Showroom supervision and sales and preference will be given to holders of the Institution of Gas Engineers' Certificate in Gas Salesmanship and Consumers' Service.

The successful applicant may be required to pass a medical examination and to subscribe to such Superannuation Scheme as the Board may adopt.

The salary will be in accordance with Grade VII, Provincial 'A,' of the National Salary Scales—£500-£580 per annum by annual increments of £20.

Applications giving personal details, particulars of training, qualifications and experience, together with the names and addresses of two referees, should reach the undersigned not later than Monday, November 26, 1951.

JAMES M. DOW,
District Manager.

27, McKenzie Street,
Paisley.
November 6, 1951.

(*Classified advertisements continued on Supplement* 4)

APPOINTMENTS VACANT (ctd.)

DRAUGHTSMAN required experienced in Design of General Chemical Plant, Structures and Welded Constructions. For Research and Development Dept. Salary according to qualifications. Canteen facilities and Pensions Scheme. Apply W. C. Holmes & Co., Ltd., Turnbridge, Huddersfield.

WELL-KNOWN Constructional Engineering Co. require young qualified ERECTION ENGINEERS. Degree or Membership I.Mech.E. desirable. Work involves erection of large coke oven, by-products, and coal washing and handling plants. Full details of education, qualifications and experience, quoting ref. No. M/130, should be sent to No. 9981, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

WEST MIDLANDS GAS BOARD
NORTH STAFFORDSHIRE DIVISION.
STAFFORD DISTRICT.
DRAUGHTSMAN/ENGINEERING ASSISTANT.

APPLICATIONS are invited from suitably qualified persons for the above position, the salary for which will be not less than £455 per annum on commencement, rising by annual increments to a maximum of £535 per annum, in accordance with Grade VI of the salary scales of the National Joint Council for Gas Staffs.

Applicants should be experienced draughtsmen with a good knowledge of structural and engineering work, including the supervision of extension works.

The successful applicant may be required to pass a medical examination and to subscribe to such scheme of superannuation as the Board may adopt. Any existing superannuation rights in the Gas Industry would be maintained.

Applications should be addressed to Mr. J. E. Stanier, Divisional Manager, West Midlands Gas Board, North Staffordshire Division, Etruria Gas Works, Stoke-on-Trent, to reach him not later than fourteen days after the appearance of this advertisement. The names of two referees should be given. Applicants are requested to quote ref. T.P.3 when replying to this advertisement.

F. H. CURETON,
Secretary.

CITY COUNCIL OF SINGAPORE
GAS DEPARTMENT

APPLICATIONS are invited for two posts of SHIFT ENGINEER in the Gas Department.

Applicants should be between 30 and 35 years of age, preferably *unmarried*, and must be good practical carbonizers, well experienced in the operation and maintenance of Horizontal Retorts, Carburetted Water Gas Plants and normal Ga Works Auxiliary Plant, including Fiddes Aldridge Charging Machine, Mono Rail Telpher, Steam Boilers, Electric Generating Plant, Purification Plant, Exhausters, Compressors, etc. They must be capable of controlling operational labour and of maintaining efficient and maximum production of Coal and Water Gas and should also be familiar with the control of heats and the keeping of operational records.

The appointment in the first instance will be on a 3 years' agreement at a monthly basic salary of $470 (£658 p.a.), $500 (£700 p.a.) and $530 (£742 p.a.) for the 1st, 2nd and 3rd year of the agreement respectively, plus variable Cost of Living and Expatriation Allowances. A commencing salary of $500 a month (£700 p.a.) may be paid if the qualifications and experience of the applicant warrant this.

For a single man the present minimum total emoluments on a basic salary of $470 a month would amount to £1,193 per annum ; for a married man with no children £1,276 and for a married man with one or more children £1,361 per annum.

If placed on the permanent establishment after satisfactory completion of the Agreement, the basic salary will be in scale $440 rising to $870 per month (£616 to £1,176 per annum). Expatriation allowance ranges from £154 per annum to £238 per annum according to salary. Cost of Living Allowance—present rates range from £381 to £462 per annum for a single man, £464 to £609 per annum for a married man without children and £549 to £777 per annum for a married man with children, according to salary. $1 equals 2s. 4d.

Partly furnished quarters provided if available at 8% of basic salary or rent allowance (at present 12% of basic salary maximum $120 p.m.) paid in lieu. Tourist Class Passages will be provided for the appointee, his wife, and children under the age of 12 years at the date of sailing.

Leave ; one month per year of service plus period of voyage, on satisfactory completion of agreement or 4 days a month of resident service plus voyage leave after 48 months if appointed to the Permanent Staff and thereafter at shorter periods. Fourteen days local leave per year.

Compulsory Provident Fund contributions at present 7½% of Salary plus Expatriation Allowance to which the City Council donates 7½% rising to 10% after 10 years' service, 15% after 15 years' service and 20% after 20 years' service. This scheme is under review.

Applications in duplicate giving full personal and technical information, with *copies* of three recent Testimonials to Messrs. Peirce & Williams, (Agents to the City Council,) 1, Victoria Street, London, S.W.1, by Thursday, November 29, 1951.

EAST MIDLANDS GAS BOARD
LEICESTER & NORTHANTS DIVISION.
TECHNICAL ASSISTANT—
RUSHDEN UNDERTAKING.

A VACANCY exists at the Rushden Undertaking for a TECHNICAL ASSISTANT. Applicants should be conversant with the control and operation of all Gas Works Plant, and be able to carry out routine tests. Experience in the operation of vertical retorts will be an advantage.

The salary will be within the range of A.P.T. Grade V of the National Salary Scales (£425-£505 per annum) according to age and experience. The post is superannuable and the successful applicant may be required to undergo a medical examination.

Applications stating age, qualifications, present position and previous training and experience, together with the names of two referees, should be sent to the undersigned to be received not later than December 1, 1951.

C. C. WOOD,
Divisional General Manager.

Millstone Lane,
Leicester.
November 9, 1951.

EAST MIDLANDS GAS BOARD
NOTTS. AND DERBY DIVISION.
MANSFIELD UNDERTAKING.
TECHNICAL ASSISTANT.

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT in the above Undertaking.

Applicants should have the Higher Grade Certificate of the Institution of Gas Engineers (Manufacture).

The salary will be in accordance with A.P.T. Grade V (£425/505) and initial placing on the grade will be according to qualifications and experience.

The post is superannuable and the successful candidate may be required to undertake a medical examination.

Applications stating age, training, qualifications and experience, together with the names of two referees should reach the undersigned not later than Saturday, November 24, 1951.

K. L. PEARCE,
Divisional General Manager.

East Midlands Gas Board,
Notts & Derby Division,
Friar Gate,
Derby.

EAST MIDLANDS GAS BOARD
NOTTS. AND DERBY DIVISION.
ILKESTON UNDERTAKING.
DISTRIBUTION SUPERINTENDENT.

APPLICATIONS are invited from suitably qualified persons for the appointment of DISTRIBUTION SUPERINTENDENT at the above Undertaking.

Applicants must be experienced in all branches of Gas Utilisation and High and Low Pressure Gas Distribution and should possess the Institution of Gas Engineers Higher Grade Certificate in Gas Supply.

Salary Grade A.P.T. VI, Provincial 'A' scale £455/£535 commencing at a figure commensurate with qualifications and experience.

The post is superannuable and the successful candidate may be required to undertake a medical examination.

Applications, stating age and experience, and giving full particulars of training, qualifications, together with the names of two referees, should be addressed to the undersigned for receipt not later than Saturday, November 24, 1951.

K. L. PEARCE,
Divisional General Manager.

East Midlands Gas Board,
Notts & Derby Division,
Friar Gate,
Derby.

EAST MIDLANDS GAS BOARD
NOTTS. & DERBY DIVISION.
DERBY UNDERTAKING.
ASSISTANT INDUSTRIAL GAS ENGINEER.

APPLICATIONS are invited from suitably qualified persons holding Certificates in Gas Engineering (Supply) for the appointment of ASSISTANT INDUSTRIAL GAS ENGINEER for the Derby Undertaking. The salary offered for the post is in accordance with A.P.T. Grade VII, Provincial 'A,' Scale £500/£580, commencing at a figure commensurate with qualifications and experience.

Candidates must have a sound knowledge of combustion and utilisation of gas for industrial and commercial purposes, particularly as applied to heavy industry.

The post is superannuable and the successful candidate may be required to undertake a medical examination.

Applications stating age and experience, giving full particulars of training, qualifications, together with the names of two referees, should be addressed to the undersigned for receipt within fourteen days of the appearance of this notice.

K. L. PEARCE,
Divisional General Manager.

Friar Gate,
Derby.

NORTH WESTERN GAS BOARD
MANCHESTER GROUP.
SHIFT ENGINEER—
PARTINGTON WORKS, MANCHESTER.

APPLICATIONS are invited for the above position at a salary within Grade A.P.T. X (£620-£720 per annum).

Applicants should have practical knowledge of the operation and maintenance of Horizontal and Vertical Retorts and C.W.G. plants, and be capable of supervising general Gas Works plant operation.

The successful applicant may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Applications, appropriately endorsed, giving personal details, particulars of Training, qualifications and experience, together with the names and addresses of two referees, should reach the General Manager, North Western Gas Board (Manchester Group), Town Hall, Manchester, 2, within twelve days of the publication of this advertisement.

PLANT FOR SALE & WANTED

PHONE 98 STAINES

FOR SALE : Steel Enclosed Belt/Bucket ELEVATORS—37 ft. centres.
80 ft. Slat CONVEYOR by Mitchell—30 in. wide slats.
R.S. RECEIVERS—24 ft. × 3 ft. 6 in. (two), 14 ft. × 4 ft., 12 ft. × 3 ft. (225 w.p.), and many others.
DIESEL LOCO. 20 h.p.—24 in. gauge.
Egg Ended Tar STORAGE R.S. TANK—34 ft. × 5 ft. 6 in.
Egg Ended OIL STORAGE TANK 30 ft. × 6 ft. 6 in.
Rectangular and Sectional TANKS.

HARRY H. GARDAM & CO., LTD.

WANTED URGENTLY one 18 in. counter-balance retort house governor, new or secondhand. Capable of passing 2½ million cu. ft. per day. Full particulars to Agent in London, Bombay Gas Co., Ltd., 54, Old Broad Street, E.C.2.

REPAIRS

FOR PUBLIC LIGHTING
CLOCK CONTROLLER REPAIRS.
(A.I.D. approved)
BRIGHT, SON & CO.
(CLERKENWELL) LTD.
SUTTON WORKS, ARLINGTON AVENUE, ISLINGTON, N.1
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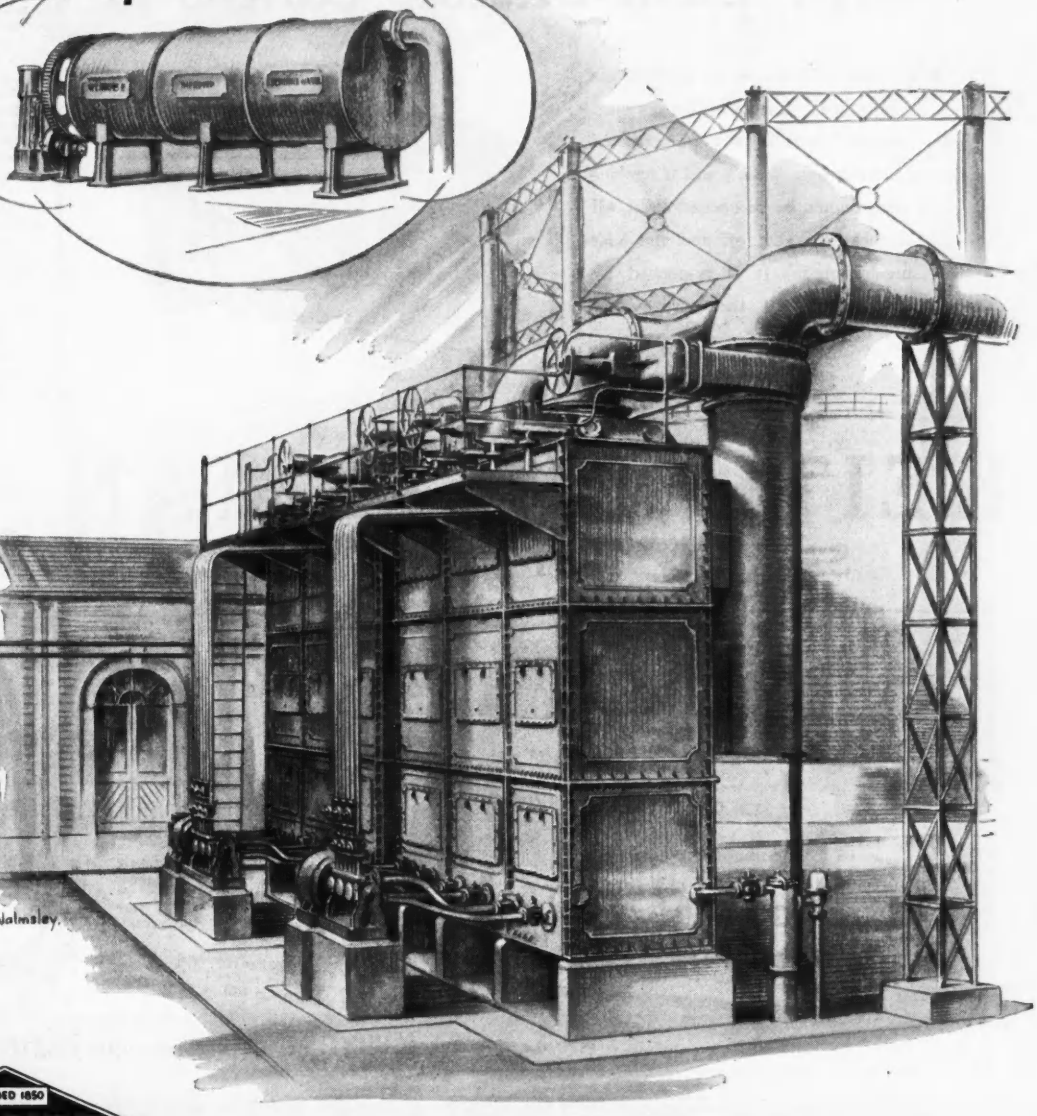
WHERE'S YOUR
NU-SWIFT?
The World's Fastest Fire Extinguishers
— for every Fire Risk
Pressure-operated by sealed CO_2 Charges
NU-SWIFT LTD. • ELLAND • YORKS
In Every Ship of the Royal Navy

BUFFALO INJECTORS
Class A
For hot or cold feed water and steam pressures up to 200 lbs.

SEND FOR LIST
GREEN & BOULDING, LTD.
162a Dalston Lane,
LONDON, E.8

The New Patent Scrubber Washer

of 1884



FOUNDED 1850
HOLMES
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MULTIFILM *Static* WASHER *of 1951*

W. C. HOLMES & CO. LTD. · HUDDERSFIELD · LONDON · BIRMINGHAM

Telephones: Huddersfield 5280 London: VICtoria 9971 Birmingham: Midland 6830 © 354

Safety Shut-off Valve

with push-button control.

This valve is for use on low pressure gas supply pipes. It shuts off the gas when the pressure drops to a pre-determined point (usually 1-in. W.G.), and it remains shut and cannot be re-opened until **all** burner cocks are shut off and the inlet pressure restored. It is re-opened by manual operation of the push-button.

Made in several sizes.

Full particulars and prices on application.

OTHER Keith Blackman specialities for the Gas Industry include:

Air and Gas Compressors
Air and Gas Mixture Controllers
High and Low Pressure Gas Injectors, Burners and Nozzles
Brazing Blowpipes
Soldering Irons and Stoves
Thermostat Gas Controllers
Laundry Irons
Back-pressure and Meter-protection Valves
Pressure Governors
Gas fired Unit Heaters
Blowers
Fans for Ventilating Mechanical Draught, etc.

KEITH BLACKMAN

SAFETY SHUT-OFF VALVE.

KEITH BLACKMAN LTD. PHILL MEAD ROAD, LONDON, N.17

194/14

EB Service in WELDING SPRAYING GUNNING of GAS RETORTS

Write for particulars of how E.B. experience can help in reducing maintenance costs in refractory constructions.

Manufacturers of all types of Cements.

E. B. REFRACTORY CEMENT CO. LTD.
OAKFIELD OFFICES, BRETTELL LANE, STOURBRIDGE

RETORTS MADE GAS TIGHT
when patched with—

ONX SUPER 83 BRAND FIRE CEMENT

A recent testimonial from Gas Dept.
"We are pleased with results obtained after using ONX Super '83' Brand.
"Our settings were very bad, with large cracks in retorts, and portions of wall actually collapsed.
"Now, six months after repairing 28 retorts they appear as sound as ever; we anticipate the life of the settings will be prolonged."

A. L. CURTIS & CO., Westmoor Works, CHATTERIS, Cambs., Eng.

GAS RETORTS

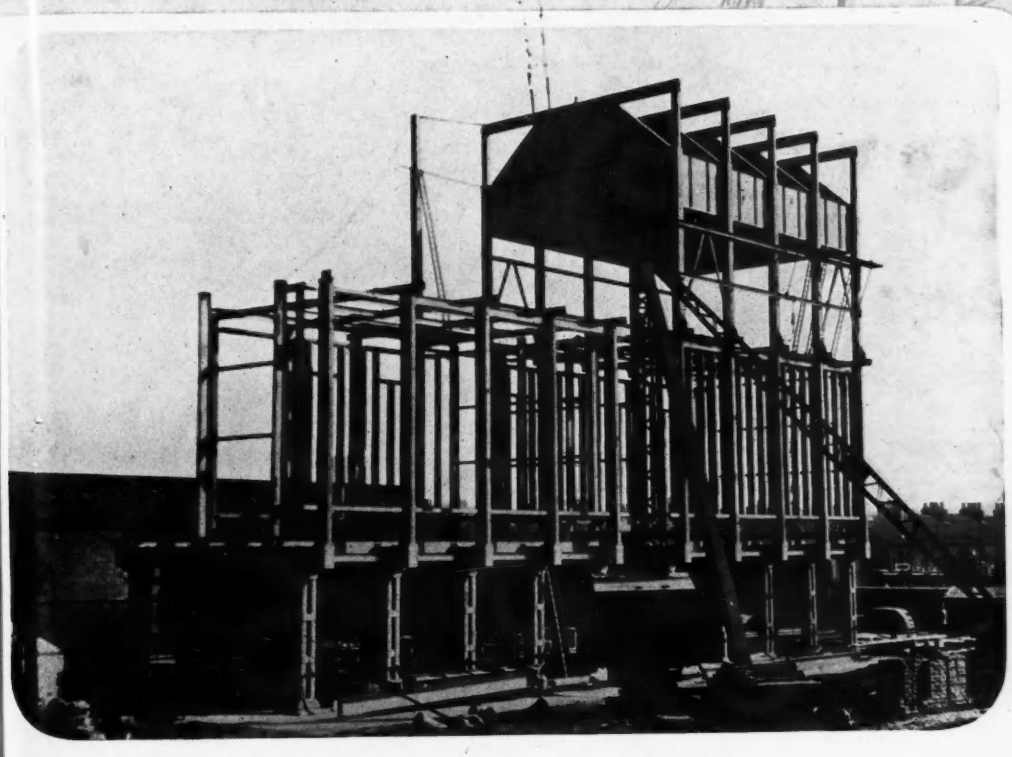
HARRIS & PEARSON LTD
STOURBRIDGE · ENGLAND

INSULATING BRICKS, RECUPERATOR TUBES, SPECIAL SEMI-SILICA QUALITY FOR SEGMENTAL RETORTS WITH NO EXPANSION OR CONTRACTION AT 1400° C

Manufacturers of
Fire Bricks, Lumps & Tiles
OF EVERY DESCRIPTION

Printed by STRAKER BROTHERS LTD., E.C.2, for WALTER KING, LIMITED, 11, BOLT COURT, FLEET STREET, LONDON, E.C.4. Wednesday, November, 14 1951.

Work in progress



STOCKTON-on-TEES

Retort Benches under construction for the installation of 64, 50 inch Glover-West Vertical Retorts.

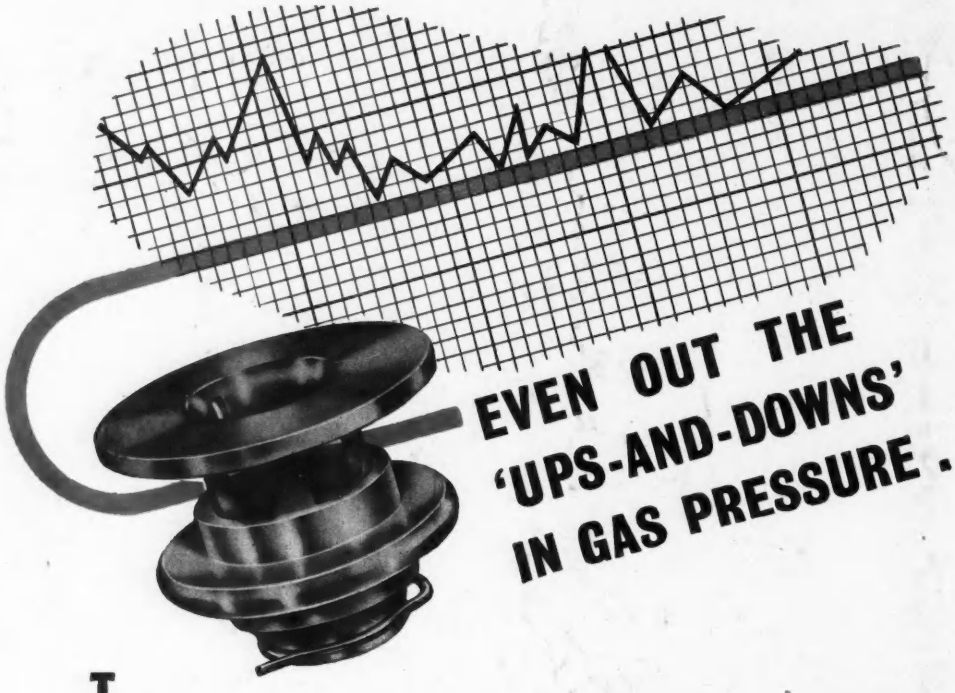
West's Gas IMPROVEMENT CO., LTD.

MILES PLATTING, MANCHESTER, 10

Telephone: COLlyhurst 2961-5. Telegrams: Stoker, Manchester.

London Office: COLUMBIA HOUSE, ALDWYCH, W.C.2. Telephone: HOLborn 4108-9. Telegrams: Wesgasco, Estrand.

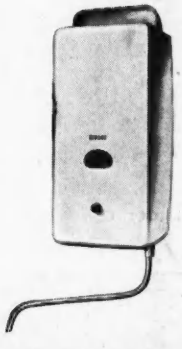
● QUICKER HOT WATER AT LOWER MAINTENANCE COST



EVEN OUT THE 'UPS-AND-DOWNS' IN GAS PRESSURE . . .

THE cost of maintaining Instantaneous Gas Water Heaters is ***SUBSTANTIALLY REDUCED*** and the User assured of a better hot water service by installing EWART geysers for the following reasons :—

- **GOVERNOR** A volume governor is provided as an integral part of ***MULTI-POINT AND SINK GEYSERS.***
- **STEATITE JET BURNERS** The solid cast burner is fitted with Steatite non-corrosive jets.
- **HEAT EXCHANGER** The heating unit built to withstand full mains pressure, has widely spaced flue ways and large water ways.
- **HORIZONTAL PILOT** Reduces blockage and ensures smooth ignition.



These special features prevent excess gas consumption. They effectively reduce wear of the heating unit and formation of corrosion on the burner and flue ways thereby achieving a substantial saving in maintenance costs and reduction in necessary service calls.

EWART GEYSERS MULTIPOINT BATH-SINK

"HOT WATER INSTANTLY—DAY AND NIGHT"

EWART & SON LTD., 14 WIGMORE ST., LONDON, W.1. Works : LETCHWORTH, HERTS. Est. 1834